IN-E-DS-U4WEB-V1_14	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual** Document Type
Document title	Page **1** of 15

Docking Station DS-U4WEB with web server version 1 Instruction Manual

IN-E-DS-U4WEB-V1_14	Rotronic AG
Document code	Bassersdorf, Switzerland
	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **2** of 15

Table of contents

Applicability:

This manual is valid for docking stations with firmware version 1.4 or higher, and with web server version 1.0 or higher. Changes to the last digit of the version number reflect minor changes that do not affect the manner in which the instrument should be operated.

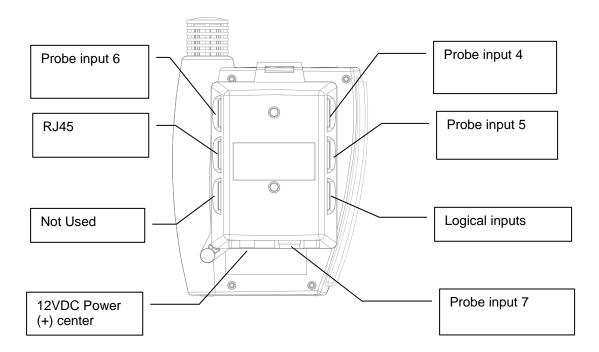| IN-E-DS-U4WEB-V1_14 | Rotronic AG |
	Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **3** of 15

1   Overview

Docking station model DS-U4WEB allows connection of the HygroLog NT data logger to an Ethernet local area network (TCP/IP) and communication with a PC with the ROTRONIC HW4 software installed. This docking station has 4 probe inputs and 2 digital inputs that can be used to monitor a contact.

The DS-U4WEB also features a Web Server that can be accessed directly from a standard web browser just like any web site by typing the IP address of the docking station. This Web Server can display current measurement data, schedule recording by the data logger, download log files and configure both the data logger and docking station from any PC, even a PC on which the HW4 software has not been installed. The Web Server can also generate a number of XML pages which allow data integration into other applications.

2   Description

2.1   Connector identification

IN-E-DS-U4WEB-V1_14	*Rotronic AG*
	Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **4** of 15

2.2 *Probe inputs*

Depending on the model of docking station, the signals from up to 4 additional probes can be processed by the HygroLog NT. These probes can be either HygroClip digital probes or analog probes (including pressure probes). Any input used together with an analog probe should be configured with the ROTRONIC HW4 software. Detailed configuration instructions are provided in document **IN-E-DS-Aconf_10.doc**.

HygroClip probes

An adapter cable is required to connect a probe to inputs 4, 5, 7 and 7 of the docking station. Use cable MOK-02-B5 (or similar) for probes with a 5-pin DAT-05 connector. Use cable T7-03-B5 (or similar) for probes with a 7-pin T7 connector.

Analog and pressure probes

The probe inputs of a docking station can be configured to accept an analog probe. Analog probes cannot be used with the probe inputs of the HygroLog NT and these inputs are designed for use with the HygroClip probes only. An analog probe can be used to measure with the HygroLog NT a parameter other than humidity or temperature. For example, an analog pressure probe may used to provide the value of barometric pressure required for the calculation of parameters such as the wet bulb temperature, mixing ratio or enthalpy.

The following requirements and restrictions apply to analog probes:

● ROTRONIC analog humidity-temperature probes with the standard temperature output signal of − 0.5…2.0 V = -50…200°C: because the HygroLog NT cannot read a negative voltage signal, temperature measurement is generally limited to values above freezing.

● Third-party analog probes: single channel probes (one signal), voltage output signal within the range of 0 to 2.5 VDC, supply voltage: 7.6…9 VDC (direct from the HygroLog NT battery) or 12 VDC when using an AC adapter, maximum current consumption: 10 mA.

  Docking station model DS-U4-4-20 accepts up to four 3-wire single channel analog probes with a 4-20 mA current output signal. Each probe input uses an internal 150 Ohm resistor to convert 4…20 mA to 600…3000 mV (nominal). The HW4 software allows a 2-point adjustment of the mA to mV conversion to compensate for the tolerance on the 150 Ohm resistor (use Device Manager in HW4). The probes are powered by the docking station (supply voltage: 7.6…9 VDC (direct from HygroLog NT battery) or 12 VDC when using an AC adapter, maximum current draw: 10 mA / probe). It is also possible to use a 2-wire single channel probe but in that case only one probe can be connected to the docking station (use any of the two probe inputs). Connecting two 2-wire probes at the same time would create a current loop and result in erroneous measurements.

● Resolution is limited by the 10-bit A/D converter used for the analog inputs. This converter provides a theoretical maximum of 1024 counts for an input voltage span of 2.5 VDC. In theory, this gives a resolution of 2.5 / 1024 = 0.00244 V. In practice, it is not possible to get 100% of the counts from an A/D converter and the actual resolution should be about 0.0027 V (typical). For example, if a probe with a temperature signal of 0...1V = 0…100°C is being used, the signal resolution will be about 100 x 1 x 0.0027 = 0.27°C
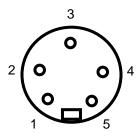
IN-E-DS-U4WEB-V1_14	*Rotronic AG*
Document code	*Bassersdorf, Switzerland*
	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **5** of 15

2.3 Logical inputs (on / off)

Several models of docking station allow the HygroLog NT to process up to 2 logical inputs. Typically this is used to monitor a relay contact, a door contact, etc.
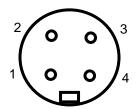
2.4 Pin-out diagrams

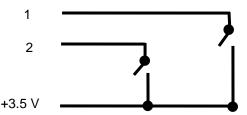**Inputs 4, 5, 6 and 7 - solder side of matching male connector**

1: not used
2: power (DC+)
3: GND (docking station) / analog (-)
4: DIO
5: analog signal (+)

Logical inputs - solder side of matching male connector

1: + 3.5 VDC
2: Input 1
3: Input 2
4: GND

Note: an internal pull-down resistor sets each input to 0 when the contact is open.

GND: not used (eventually use for a shield)

Logical Thresholds: logical 1: ≥ 2.8 VDC, logical 0: ≤ 0.7 VDC

2.5 Operating limits

The docking station operating limits are the same as for the HygroLog NT data logger:

HygroLog NT without display:

● -10…50°C with the factory supplied alkaline battery

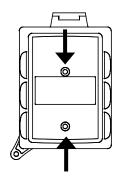● -30…70°C with a lithium battery or an external AC adapter

HygroLog NT with display:

● -10…50°C with the factory supplied alkaline battery

● -10…60°C with a lithium battery or an external AC adapter

The HygroClip probes have generally wider operating limits (see individual probe specifications).

| IN-E-DS-U4WEB-V1_14 | Rotronic AG |
| Bassersdorf, Switzerland |
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **6** of 15

3   Installation

To mount the docking station to a wall, use the two holes shown on the right. The HygroLog NT can then be attached to the docking station as explained below.

To attach the HygroLog NT to the docking station:

Place the HygroLog NT on the docking station so as to match the two areas [A]. Press lightly one against the other and secure the assembly with threaded pin [B].

When the docking station is mounted on a wall, a small padlock (not shown) may be put through pin [B] to prevent removal of the HygroLog NT from the docking station.

IN-E-DS-U4WEB-V1_14	*Rotronic AG*
	Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **7** of 15

4   ROTRONIC device configuration certificate

ROTRONIC docking stations with an Ethernet interface (both wired and wireless) are shipped with a Device Configuration Certificate that provides information about the factory configuration settings, in particular the TCP/IP settings. See example below:

Setting	Value
DHCP or Static Address	Static
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.0
TCP Port	2101
MAC Address	00:40:9D:28:2D:2A
Firmware Release (device)	1.4
Serial Port Configuration Profile	TCP Sockets
Basic Serial Settings	
Baud Rate	57600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Note: the Baud rate setting of the DS-U4WEB internal Ethernet module cannot be changed and is always 57600 bps. Consequently, any HygroLog NT used with this docking station should also be set to a Baud rate of 57600 bps to enable communication between the logger and docking station.

IN-E-DS-U4WEB-V1_14	*Rotronic AG*
	Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **8** of 15

5   Baud rate compatibility requirements

The default factory Baud rate for both the HygroLog NT and docking stations with Ethernet interface is 57600 bps.

Devices with mismatched Baud rate will not communicate together. A Baud rate mismatch can become an issue when an existing data logger is used with a new docking station.

Prior to using an existing data logger with a new docking station, you should verify that the Baud rate of the data logger is set to 57600 bps. On a data logger with display and keypad, the Baud rate can be displayed by using the keypad: MENU > Instrument.

The Baud rate settings of the HygroLog NT can only be changed with the Device Manager function (Digital Interface tab) available from within the HW4 software. Depending on the situation, you may have to use a docking station with either an RS-232 (COM port) or USB interface to connect the logger to the HW4 PC. Communication between the HygroLog NT and a docking station with either RS-232 or USB interface is not affected by the baud rate of the data logger.

6   Configuration of the internal Ethernet module

- Place a HygroLog NT on the docking station. Use an AC adapter to power both the data logger and docking station.

  IMPORTANT: Prior to using a new docking station with a previously configured data logger, you should verify the Baud rate used by the data logger and, if necessary, use HW4 Device Manager to change the Baud rate of the data logger to the factory standard of 57600 bps.

- Prior to connecting the docking station to the local area network, please read the Device Configuration Certificate supplied with the docking station as well as document **IN-E-TCPIP-Conf_11**. This document provides detailed instruction for configuring the internal Ethernet (TCP/IP) module of the docking station to make it compatible with your local area network.

Notes:

- The utility **Finder.exe** is provided on the HW4 software CD. This utility can be used to discover the internal Ethernet module of the DS-U4WEB docking station and changing its TCP/IP settings. To start Finder.exe, double click on the file with the mouse. The following password is required: **Netsilicon**

- The internal Ethernet module of the DS-U4WEB is not compatible with the Digi Device Discovery utility mentioned in document IN-E-TCPIP-Conf_11

- Configuration of the TCP/IP settings can also be done with the docking station Web Server (provided that the TCP/IP settings of the DS-U4WEB are compatible with the LAN to which the docking station is attached and the IP address of the DS-U4WEB is known).
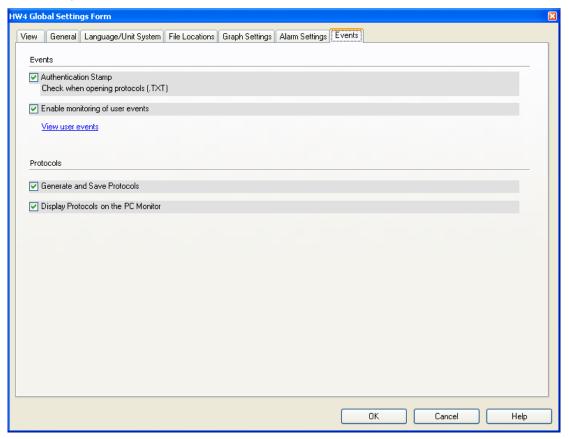
IN-E-DS-U4WEB-V1_14	Rotronic AG
Document code	Bassersdorf, Switzerland
	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **9** of 15

7   Other configuration settings

Either the HW4 software or the Web Server can be used to configure both the HygroLog NT data logger and docking station. Unlike HW4, the Web Server does not generate an authenticated configuration protocol. For this reason, using HW4 should be the preferred configuration method.

With the exception of the TCP/IP settings and other settings of the docking station internal Ethernet module, all configuration data is retained in the HygroLog NT non-volatile memory. In particular, no input configuration data is retained in the docking station proper. Therefore, it is important to observe the following:

- Prior to configuring the data logger and docking station with the HW4 software, we strongly recommend enabling HW4 to generate and save protocols (see below). After using Device Manager in HW4 to configure the data logger and docking station, print the configuration protocol for your records. This protocol includes information that will eventually be useful such as serial number and firmware version of the data logger, serial number and firmware version of the docking station as well as detailed configuration settings (logger and docking station).

- Search for the data logger with HW4 and use Device Manager to configure both the data logger and any available probe or logical input of the docking station as required by the intended application.
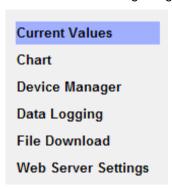
IN-E-DS-U4WEB-V1_14		Rotronic AG
Document code		Bassersdorf, Switzerland
		Unit
Docking station DS-U4WEB with web server version 1: instruction manual		**Instruction Manual**
		Document Type
Document title		Page **10** of 15

- Avoid separating a matched pair of data logger and docking station, especially when analog probes are used with the docking station.

8   Web Server

Just like any web site, the docking station Web Server can be accessed with a standard web browser, simply by typing the docking station IP address. Example: http://192.168.57.29

The Web Server navigator gives direct access to the following screens:

Current Values

Chart

Device Manager

Data Logging

File Download

Web Server Settings

The contents of each screen are self explanatory and similar to the equivalent screens in the HW4 software.

Note regarding the Chart page:

Depending on the communication speed with the DS-UAWEB docking station, Internet Explorer may stop downloading the Chart page and display the following message box. When this happens, click on the No button to proceed.

Windows Internet Explorer

Stop running this script?

A script on this page is causing Internet Explorer to run slowly. If it continues to run, your computer may become unresponsive.

[Yes]   [No]

8.1   Web Server pages and files

The Web Server feature both HTML pages and XML files.

Any of the following pages and files can be directly opened simply by typing the full page or file name after the Web Server IP address as illustrated in the following example:

http://192.168.1.83/Recording.xml

IN-E-DS-U4WEB-V1_14	Rotronic AG
	Bassersdorf, Switzerland
Document code	Unit

Docking station DS-U4WEB with web server version 1: instruction manual	Instruction Manual
	Document Type
Document title	Page **11** of 15

HTML	Description
Home.htm (Current Values)	Rotronic Logo, firmware version, page navigator and current measurement data for the inputs selected in the Web Server Settings page. Automatic refresh rate: 60 seconds.
Messwerte.htm	This page is similar to Home.htm without Rotronic logo, firmware version and page navigator. Automatic refresh rate: 60 seconds.
Probes.htm	Displays the current measurement data for all inputs (selected or not) as unformatted text. (HTML)
Humi1 ... Humi7 (no extension)	Current humidity value for specified input (incl. unit) in text format
Temp1 … Temp7 (no extension)	Current temperature value for specified input (incl. unit) in text format
Calc1 … Calc7 (no extension)	Current calculated parameter value for specified input (incl. unit) in text format
MesswerteChart.htm	Displays a bar graph for the parameter selected in the page header table. The most recent 500 values (at the time the page was opened) are displayed in the graph, based on the graph interval selected under Settings. Bring the mouse cursor over the chart to see a data cursor that displays the value, date and time of one data point at a time. - Automatic scale - No zoom function - No automatic refresh Note: the data underlying the chart is held in the docking station volatile memory as opposed to the flash memory card of the data logger. This data is lost when power is removed from the docking station or when clicking on the apply button in the Web Server Settings page.
Properties.htm	Displays the current configuration settings for both the data logger and docking station. The settings can be changed from this page.
FreeFlash.htm	Displays the amount of free memory available on the data logger flash card
Recording.htm	Displays the current settings of the data logger recording function. The settings can be changed from this page

IN-E-DS-U4WEB-V1_14	Rotronic AG
	Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **12** of 15

HTML Pages	Description
Download.htm	Displays a table showing a directory of the files currently present in the data logger flash card. To display a file (text files only) directly within Internet Explorer, left click on the file To save a file to disk, right click on the file in the table and select Save Target As… - Download speed is limited to about 5kB/sec - File download cannot be cancelled
„Filename.xls"	Direct download of a file (applies to text files only)
„Filename" (no extension)	Displays the contents of a file content in the browser (applies to text files only)
Settings.htm	Displays the current configuration settings of the Web Server (IP Address, Passwords, etc.). Use this page to change these settings. **WARNING**: clicking on "Apply" erases all data from the docking station volatile memory, even when no change has been made to the settings.

XML Files	Description
Measurement.xml	Most recent measurement data (including alarm data) for the currently selected inputs. The digital inputs are not included in this file.
Properties.xml	Current configuration settings for both the data logger and docking station (read only)
Recording.xml	Displays the current settings of the data logger recording function (read only)
Records1.xml	All data present in the docking station volatile memory for the current day (starts at 00:00 am) and for the currently selected inputs. The digital inputs are not included in this file.
Records2.xml	All data present in the docking station volatile memory for the previous days and for the currently selected inputs. The digital inputs are not included in this file. Note that this file is empty when there is no data from previous days.

IN-E-DS-U4WEB-V1_14	Rotronic AG
	Bassersdorf, Switzerland
Document code	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **13** of 15

8.2 Additional information

- The Web Server graph data is lost when power is turned off.

- When the IP address of the data logger is accesses via Internet, be cautious when synchronizing the data logger time and date with your PC since you may not be in the same time zone as the data logger.

- After synchronizing the data logger time and date with the PC, go to Web Server Settings and click on "Apply". This erases all data from the docking station volatile memory and prevents potential conflict between the old and new time.

- Except for the log file header, HW4 is required to read the data from any downloaded log file in binary (LOG) format.

- HW4 is required to view the data from any downloaded log file in graphic form.

- The data logger cannot be interrogated or written to during a file download. Measurement data displayed by the Web Server is not updated.

- Direct connection via TCP Port 2101: to maintain compatibility with HW4, connectivity with the data logger is possible using the TCP Protocol. This function cannot be disabled or password protected.

- RS-485 network: not supported, with or without HW4.

IN-E-DS-U4WEB-V1_14	*Rotronic AG*
Document code	*Bassersdorf, Switzerland*
	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **14** of 15

9   Performing a flash update

Whenever an update is available, a flash update of the docking station internal Ethernet module can be done as explained below:

- Be sure to have the IP address of the docking station available (example: 192.168.5.76)

- Place a HygroLog NT on the docking station and keep the docking station powered during the entire flash update process

- Download a copy the update file (example: **dsu4web_vxx.bin**) to the root directory of your PC hard drive (C:\)

- In Windows XP, click on START > All Programs > Accessories > Command Prompt

- In Command Prompt, type CD \ (changes the directory to the root of drive C)

- At the command prompt C:\ type the following sequence of commands as indicated in bold characters below (any text in italics denotes a PC answer):

  C:\>**ftp 192.168.5.76**

  Connected to 192.168.5.76
  220 NET+OS 6.3 FTP server ready

  User (192.168.5.76:(none)): **(none)** - note: include the brackets

  230 User (none) logged in

  ftp> **bin**

  200 Type set to I.

  ftp> **put dsu4web_vxx.bin** (use the actual bin file name)

  200 PORT command Ok.

  150 About to open data connection.

  226 Transfer complete (this answer may take some time to appear)

  FTP: 385940 Bytes sent in 1.58Seconds 244.58 Kbytes/sec.

  ftp> **quit**

  221 Goodbye.

- C:\>**exit** (closes Command Prompt and return to Windows)

IN-E-DS-U4WEB-V1_14	Rotronic AG
Document code	Bassersdorf, Switzerland
	Unit
Docking station DS-U4WEB with web server version 1: instruction manual	**Instruction Manual**
	Document Type
Document title	Page **15** of 15

- Wait a few seconds to allow the docking station to go through an automatic reboot. Keep the docking station powered for at least 2 to 3 minutes.

Note: to exit the ftp function at any time and return to the command line prompt, type **bye**.

10 Document releases

Release	Date	Notes
_10	Feb. 08, 2007	Provisory release 1 Docking station firmware: v1.4 Web server firmware: v1.0 RC7
_11	Feb. 19, 2007	Provisory release 2 Docking station firmware: v1.4 Web server firmware: v1.0 RC8
_12	Feb. 20, 2007	Final release Docking station firmware: v1.4 Web server firmware: v1.0
_13	May 3, 2007	Made minor editorial changes
_14	Feb. 10, 2009	Added logical threshold specifications for the docking station logical inputs