

# DS-NET-CPU3 Technical Reference Manual Version: 1.0.0



## Thank you!

Thank you very much for your investment in our unique data acquisition systems. These are top-quality instruments which are designed to provide you years of reliable service. This guide has been prepared to help you get the most from your investment, starting from the day you take it out of the box, and extending for years into the future.

#### www.dewesoft.com

# **Table Of Contents**

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1	Notice	1
	1.1 Safety instructions	2
2	About this document	7
	2.1 Legend	7
3	Getting Started	9
	3.1 Part-list	9
	3.2 First Start	10
4	Technical Data	11
	4.1 Hardware Features	11
	4.2 Mechanical and Environmental	11
	4.3 LEDs	11
	4.3.1 Power LED	11
	4.3.2 LAN LEDs	11
5	Software	13
	5.1 BIOS	13
	5.2 Operating System	13
	5.2.1 Start-up & Shut down	13
	5.2.2 Time Zone settings	14
	5.2.3 Regional settings	15
	5.2.4 TCP/IP settings	16
	5.3 Application Software	16
	5.3.1 Foxit Reader	16
	5.3.2 DEWESoft®	16
	5.3.3 Ultra VNC	16
	5.3.4 test.commander, ICP100	16
6	CAN Module	17
	6.1 Physical Connection.	17
	6.2 CAN Specifications	17
	6.3 CAN Windows® Driver Setup	17
	6.4 DEWESoft® CAN Configuration	18
	6.4.1 DEWESoft® Settings	18
	6.4.2 CAN Channel Setup	18
7	Advanced	19
	7.1 DEWE-NET Option	19
	7.2 Wireless Connection	19
	7.2.1 Prerequisites	19
	7.2.2 Hosted Network on Windows 7	19
	7.2.3 Open a VNC connection	21
	7.3 System Recovery	21
	7.3.1 Recovery Preparation	21
	7.3.2 Restoring a partition	22
8	Appendix	25
	8.1 Glossary and abbreviations.	25
	8.2 Documentation version history	29

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# 1 Notice

The information contained in this document is subject to change without notice.



#### Warranty Information:

A copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office.

To find a local dealer for your country, please visit this link: <u>http://www.dewesoft.com/about#distributors</u>

#### Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year, after system delivery.

### Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support please contact your local distributor first or Dewesoft directly.

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The telephone hotline is available
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08:00 and 16:00 CET (GMT +1:00)

#### Service/repairs

The team of Dewesoft also performs any kinds of repairs to your system to assure a safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly.

#### **Restricted Rights Legend:**

Use Austrian law for duplication or disclosure.

Dewesoft GmbH Grazerstrasse 7 A-8062 Kumberg Austria / Europe

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## Copyright

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# 1.1 Safety instructions

#### Your safety is our primary concern! Please be safe!

#### Safety symbols in the manual



#### CAUTION



Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

#### **General Safety Instructions**



The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft GmbH assumes no liability for the customer's failure to comply with these requirements.

### All accessories shown in this document are available as option and will not be shipped as standard parts.

### **Environmental Considerations**

Information about the environmental impact of the product.

## Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

## System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at it's end of life! Please recycle this product in an appropriate way to avoid an unnecessary pollution of the environment and to keep natural resources.



This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site <a href="https://www.dewesoft.com">www.dewesoft.com</a>

#### **Restriction of Hazardous Substances**

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. However we take care about our environment and the product is lead free.

#### General safety and hazard warnings for all Dewesoft systems

- A Safety of the operator and the unit depend on following these rules
- & Use this system under the terms of the specifications only to avoid any possible danger.
- A Read your manual before operating the system.
- A Observe local laws when using the instrument.
- A DO NOT touch internal wiring!
- A DO NOT use higher supply voltage than specified!
- A Use only original plugs and cables for harnessing.
- A You may not connect higher voltages than rated to any connectors.
- A The power-cable and -connector serve as Power-Breaker. The cable must not exceed 3 meters, disconnect function must be possible without tools.
- A Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advices for using the system.
- A With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.

- A Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.
- Let The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- A The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- A DO NOT use the system if equipment covers or shields are removed.
- Å If you assume the system is damaged, get it examined by authorised personnel only.
- Adverse environmental conditions are:
  - A Moisture or high humidity
  - A Dust, flammable gases, fumes or dissolver
  - A Thunderstorm or thunderstorm conditions (except assembly PNA)
  - A Electrostatic fields, etcetera.
- A The measurement category can be adjusted depending on module configuration.
- Any other use than described above may damage your system and is attended with dangers like short-circuit, fire or electric shocks.
- A The whole system must not be changed, rebuilt or opened
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- DO NOT service or adjust alone. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
- If you assume a more risk less use is not provided any more, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more risk less operation is not possible any more, if
  - be the system is damaged obviously or causes strange noises.
  - ▲ the system does not work any more.
  - **b** the system has been exposed to long storage in adverse environmental.
  - & the system has been exposed to heavy shipment strain.
- DO NOT touch any exposed connectors or components if they are live wired. The use of metal bare wires is not allowed. There is a risk of short cut and fire hazard!
- Warranty void if damages caused by disregarding this manual. For consequential damages NO liability will be assumed!
- A Warranty void if damages to property or persons caused by improper use or disregarding the safety instructions.
- Lunauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- A The product heats during operation. Make sure there is adequate ventilation. Ventilation slots or cooling fins must not be covered!
- A Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- A Prevent using metal bare wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.

- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Avoid operation in the immediate vicinity of:
  - ▲ high magnetic or electromagnetic fields
  - k transmitting antennas or high-frequency generators
  - A for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned to the specification of the system only. Fire hazard in case of overload!
- bo not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
- ▲ Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- Let The electrical installations and equipments in industrial facilities must be observed by the security regulations and insurance institutions.
- A The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- A The measuring systems are not designed for use at humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advices of the connected systems.

This product has left the factory in safety-related flawless and in proper condition.

In order to maintain this condition and guarantee safety use, the user has to consider the security advices and warnings in this manual.

## EN 61326-3-1:2008

IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.

Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as "operationally well-tried", are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for protection of buildings, are excluded from the scope of IEC 61326-3-1.

# 2 About this document

This is the Technical Reference Manual for DS-NET-CPU3 Version 1.0.0.

The optional DS-NET-CPU module adds a full-featured PC to your DS-NET system and turns it into a complete instrument. The CPU module enables you to run DEWESoft® software locally (directly on the CPU module of your DS-NET system). Measurement data is stored directly onto the internal flash disk and the CPU module can be remotely accessed via LAN or WLAN. Attach a keyboard and a display to the instrument for full control and to display the measurement data.

This documentation is only an optional supplement to the *DS-NET users manual* for your DS-NET system. The DS-NET users manual is included with your DS-NET system shipment and can also be downloaded from the Dewesoft homepage: <u>http://www.dewesoft.com/download#Manuals</u> On the left side of this page select *Manuals* and then click the download link for the *DS-NET users manual*.

To get the most recent version of this document, select DS-NET CPU users manual.

# 2.1 Legend

The following symbols and formats will be used throughout the document.



Gives you a hint or provides additional information about a subject.





Gives you an example to a specific subject.

Example	Meaning	Description
Cancel	Button	a button that you can click
File	Menu Item	a menu item, will open a sub menu or a dialogue
Times New Roman	List Item	an item in a list (or tree) that you can select
Events Tab Sheet		a tab sheet that you can select
C:\Program Files\OpenOffice.org 3\readme.txt	File Path and Name	a file name or path
Windows Key	a term	any kind of term (maybe also compound)
SNR: 85dB	Preliminary info	Preliminary information: e.g. specifications that are not confirmed yet

Table 1: Layout formats used in the documentation

# **3 Getting Started**

This chapter includes the most important information to get your DS-NET-CPU module up and running.

CAUTION	The DS-NET system is configured to be used as a stand-alone instrument inside of a company. If you want to use it at a place where other people can easily access it or if you want to connect the DS-NET-CPU module directly to the Internet, you may want to change security related settings, e.g.:
	Set a BIOS passwords Descured Protect Windows <sup>®</sup> user accounts
	<ul> <li>A Install anti-virus software</li> <li>Activate the Firewall</li> </ul>
	<ul> <li>Disable Ultra-VNC (and thus the DEWESoft® NET option).</li> <li>Enable/disable Windows<sup>®</sup> Services</li> </ul>
	👃 etc.

# 3.1 Part-list

In addition to the standard parts of a DS-NET system, the DS-NET-CPU system will have these parts:

- A DS-NET-CPU3 Technical Reference Manual: this documentation in printed form
- A Windows® Operating system license
- LeweSoft® license (including DEWESoft® NET option)
- Bootable Recovery USB-stick (see Illustration 6) for the DS-NET-CPU module (see also 7.3 System Recovery on page 21)
- Network cable, 0.15 meter: for connecting the Ethernet port (*LAN*) of the DS-NET-CPU module to the Ethernet port (*NET*) of the DS-GATE module): see Illustration 1
- 🝐 4-way USB Hub cable
- ▲ Video related:
  - Mini HDM to HDMI cable (1m): see Illustration 2
  - A HDMI to DVI adapter: see Illustration 3
  - A Mini HDMI to VGA adapter: see Illustration 4
- & WLAN antenna: see Illustration 5



Illustration 1: Network cable



Illustration 2: Mini HDM to HDMI cable



Illustration 3: HDMI to DVI adapter



Illustration 5: WLAN antenna



Illustration 4: Mini HDMI to VGA adapter



Illustration 6: Recovery USB-stick

## 3.2 First Start

Before you power up your system you should connect all required peripherals.



Illustration 7: CPU connectors

All connectors on the DS-NET-CPU module and on the DS-GATE module are labelled: see Illustration 7

Connect a display to the *Mini-HDMI* connector and a USB-mouse and USB-keyboard to the *USB 3.0* connectors of your DS-NET-CPU module.

You may also want to attach the WLAN antenna to the *WLAN* connector of the DS-NET-CPU module.-

In order to use the DS-NET measuring modules, you must connect the *LAN* connector of the DS-NET-CPU module via the short Ethernet cable (see Illustration 1: Network cable on page 9) to the *NET* connector of the DS-GATE module (see red line in Illustration 7).

Now that all the peripherals are connected, you can plug the LEMO connector of the power-supply into the DS-GATE module: the connector is labelled: *10-30 V DC*. Note, that the DS-NET-CPU is internally connected to the power supply of the DS-GATE module. The orange power LED should now be on.

The PWR button can be used to manually switch the CPU on or off (hold for about 4 seconds to immediately power off the system).

# 4 Technical Data

# 4.1 Hardware Features

Processor	Intel NUC board with Intel® Core <sup>TM</sup> i3-4010U processor
Memory	4 GB RAM
GraphicsMini HDMI port: The maximum supported resolution is 1920 x 1200 @ 60 Hz, 2 HDMI port is compliant with the HDMI 1.4a specification. Adapters and cables included: see 3.1 Part-list on page 9	
Peripherals	2 USB 3.0 ports
Storage	120GB SSD
Network	Gigabit (10/100/1000 Mb/s) LAN subsystem see also: 4.3.2 LAN LEDs on page 11
Real-Time Clock	A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the DS-NET-CPU is not powered, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery.

# 4.2 Mechanical and Environmental

Non-Operating Temperature	-40°C to +60°C
<b>Operating Temperature</b>	0°C to +50 °C cold-start -20°C to +50°C during operation
Power	Internally powered via DS-GATE module.
Power consumption	Typical: 15W

# 4.3 LEDs

# 4.3.1 Power LED

When the orange Power LED is lit, the CPU is on. You can shut-down Windows $\mathbb{R}$  to deactivate the CPU or you may press the *PWR* button (see 4.1 also Hardware Features on page 11) to force a shut-down.

# 4.3.2 LAN LEDs

Two LEDs are built into the RJ-45 LAN connector:

LED	Description	
А	Link LED (Green)	
В	Date Rate LED (Green/Yellow)	



Illustration 8: LAN RJ-45

## 4.3.2.1 LAN Connector LED States

LED	LED Colour	LED State	Condition
	Green	Off	LAN link is not established
Link		On	LAN link is established
		Blinking	LAN is active
	Green/Yellow	Off	10 Mb/s data rate
Data Rate		Green	100 Mb/s data rate
		Yellow	1000 Mb/s data rate

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# 5 Software

# 5.1 BIOS

When you get your DS-NET-CPU no BIOS passwords are set. You may want to set these passwords to protect your system. When you boot up the device, press  $\boxed{F2}$  to enter the BIOS.

# 5.2 Operating System

Your device is set up with an activated version of Windows<sup>®</sup>. The operating system and the correct drivers for your hardware have already been installed and preconfigured. Moreover the data acquisition programs have been installed, licensed and preconfigured.

Note: There is no anti-virus software installed and the firewall is deactivated.

# 5.2.1 Start-up & Shut down

When the DS-NET system is powered on, the CPU will automatically boot Windows®.

The system is preconfigured to have one user who is the computer administrator: this account does not have a password, so that the user will be logged in automatically.

A link to DEWESoft® is stored in the *Startup* folder, so that DEWESoft® will start automatically when you boot Windows®. Optionally you may want to configure DEWESoft® to automatically load a setup and start storing – check the DEWESoft® user documentation for details.

The CPU has an AUTO-ON option. That means, that the system will automatically restart if there is a power failure.



# 5.2.2 Time Zone settings

To change the time zone settings, right-click the system clock at the right bottom of the Windows® desktop and then select *Adjust date/time* from the pop-up menu:



Illustration 9: Date-Time pop-up

Then the *Date and Time dialogue* will be opened, where you can go click on <u>Change time zone</u>... to change the currently selected time zone.

Then click **OK** to close the dialogue.

Date and Time Additional Cl	ocks
	Date: 28 May 2015 Time: 16:55:44
Time zone (UTC+01:00) Amsterdam	n, Berlin, Bern, Rome, Stockholm, Vienna
Daylight Saving Time en go back 1 hour at that ti	ds on 25 October 2015 at 03:00. The clock is set to me.
Votify me when the	clock changes
Get more time zone info	rmation online
How do I set the clock a	nd time zone?

Illustration 10: Date and Time dialogue

# 5.2.3 Regional settings

To open the control panel: click the Windows® Start button and then select *Control Panel*:



Illustration 11: Open Control Panel

Configure your preferences on the tab-sheet Formats:

🥶 🕨 Control Panel 🕨 All Control Panel Items 🕨  $\bigcirc$ File Edit View Tools Help Adjust your computer's settings Action Center Administrative BDE Administra Backup and Restore Credential Manager P Date and Time Devices and Printers 🔄 Display **Fonts** Getting Started Intel(R) Graphics and Media TInternet Option Location and Other Sensors Mail (Microsoft) Real Constitution Area Icons NVIDIA Control Power Options Phone and Modem 🔗 Region and Language RemoteApp and Sync Center System & User Accounts Windows Cards Windows Mobility Center 🖉 Windows Upda

Illustration 12: Control Panel: Region and Language

You may also want to change the setttings in the Keyboards and Languages tab-sheet:

🔗 Region and Languag	e	S Region and Language
Formats Location Key	/boards and Languages Administrative	Formats Location Keyboards and Languages Administrative
Format:		Keyboards and other input languages
English (United King	jdom) 👻	To change your keyboard or input language click Change keyboards.
Date and time form	nats	Change keyboards
Short date:	dd/MM/yyyy	How do I change the keyboard layout for the welcome screen?
Long date:	dd MMMM ywy	Display language
CL UK		Install or uninstall languages that Windows can use to display text and where supported recognize speech and handwriting.
Short time:	HH:mm 🔻	
Long time:	HH:mm:ss 🔻	🐨 Install/uninstall languages
First day of week:	Monday	Choose a display language:
What does the nota	ation mean?	English
Examples		
Short date:	28/05/2015	
Long date:	28 May 2015	
Short time:	17:05	
Long time:	17:05:06	
	Additional settings	
Go online to learn ab	out changing languages and regional formats	How can I install additional languages?
	OK Cancel Apply	OK Cancel Apply
Illustration 1	3: Region and Language: Format	Illustration 14: Region and Language: Keyboards

Then double click the Region and Language item.

## 5.2.4 TCP/IP settings

The DS-NET-CPU has a LAN and a WLAN Ethernet adapter.

The WLAN is configured to obtain it's IP address automatically via DHCP.

The LAN is configured to use the following fixed IP settings, so that the DS-GATE (which has a default IP address of: 192.168.1.28) is in the same sub-net<sup>1</sup>:

IP	192.168.	1.	20
Subnet-Mask	255.255.	255.	0
Gateway	192.168.	1.	1
DNS	192.168.	1.	111

Table 2: Default LAN IP settings

## 5.3 Application Software

This part of the documentation describes the major application software that has already been installed and preconfigured on your DS-NET-CPU module.

## 5.3.1 Foxit Reader

Foxit Reader is a lightweight PDF viewer to display our documentation files: http://www.foxitsoftware.com/pdf/reader/.

## 5.3.2 DEWESoft®

DEWESoft® is already installed, licensed and preconfigured for your DS-NET measurement system. The DEWE-NET option (see also 7.1 DEWE-NET Option on page 19) is activated and is configured to work as a *Slave measurement unit*.

The *Default* project is configured to load the *Default.d7s* setup when DEWESoft® is started. This can be changed under: *Settings* – *Startup* - Startup - Startup.

## 5.3.3 Ultra VNC

Ultra VNC is required when you use the DEWE-NET option (see also 7.1 DEWE-NET Option on page 19) to access the DS-NET-CPU from another computer: <u>http://www.uvnc.com/</u>.

## 5.3.4 test.commander, ICP100

The programs *test.commander* and *ICP100* are optional software programs for your DS-NET system. Usually you do not need to work with these programs directly, but it is recommended to have them installed for full access to expert DS-NET functions.

When you get your DS-NET system a *test.commander* project called FACTORY\_SETUP.EPJ has been created for you. This may be useful if you want to restore the factory settings of the DS-NET measuring modules, so you should not delete it.

<sup>1</sup> Please consult the DS-NET user manual for more details on the IP settings

# 6 CAN Module

The DS-NET system may contain up to 2 optional CAN modules.

If your system contains a CAN module, everything will already be setup for you (Windows® drivers, DEWESoft® setup, etc.).

# 6.1 Physical Connection

The D-SUB9 CAN connectors have the following pin assignment:



Pin	Name	Description
1	+5V	+V5 sensor supply
2	CAN_LOW	CAN Low
3	GND	Ground
4	RES	Reserved line
5	RES	Reserved line
6	GND	Ground
7	CAN_HIGH	CAN High
8	RES	Reserved line
9	+15V	+15V sensor supply

Table 3: Pin assignment CAN

Termination resistors of 1200hm are required at each end of the cable:



Illustration 16: CAN - Termination resistors

# 6.2 CAN Specifications

Number of ports:	2
Interface type:	CAN 2.0B, up to 1 MBit/sec
Special applications:	OBDII, J1939, CAN output
Galvanic isolation (CAN):	Yes
Connection Type:	USB2.0
Sensor Supply Voltage:	+5V and +15V, 800mA each

Table 4: CAN Specifications

# 6.3 CAN Windows® Driver Setup

When you get your DS-NET system, the Windows® drivers are already pre-installed. If you want to change/deinstall/reinstall the CAN drivers, please download the latest version from our homepage: <u>http://www.dewesoft.com/download#Drivers</u>

# 6.4 DEWESoft® CAN Configuration

Describes the usage of the CAN modules in DEWESoft®.

# 6.4.1 DEWESoft® Settings

Note: when you get your DS-NET system, the DEWESoft® settings will already be configured correctly. This chapter is just for reference.



## 6.4.2 CAN Channel Setup

The most important setting in the CAN channel setup is the Baud-rate:

		-	DEWE	Soft X2 SF	93 b3		
	Acquisition	Analysis	Setup	files Ch.	setup Me	easure	
Store	Save	Save as	Storing	ette Analog in	CAN	Math	DS NET
CAN 0 C Err. msg	AN 1	CAN bu	is traffic e all messag	2 Mess Sear	age/channe	۹	Filters Messages Ch
500 400 250 200 125 100 62.5 50	Bits	Scar     Freque	ncy U	sed 🔳 C	R/T		Name

Illustration 19: CAN channel setup - select Baud-rate

The selected Baud-rate **1** must match the Baud-rate of the CAN bus, otherwise you will not get any data. To test the communication you can check the *Scan* check-box **2** and you should already see CAN messages.

# 7 Advanced

# 7.1 DEWE-NET Option

The DEWE-NET option can be used to access the DS-NET-CPU module from a remote PC or tablet. Under the hood, the DEWE-NET option uses *Ultra VNC* to transfer the screen contents to the remote PC.

#### IMPORTANT



*Ultra VNC* only works, when a monitor is connected to the DS-NET-CPU system. Instead of connecting a real monitor you can also connect the Mini HDMI to VGA adapter (see Illustration 4 in chapter 3.1 Part-list on page 9).

# 7.2 Wireless Connection

This topic will show how to establish a wireless connection between the DS-NET-CPU (running Windows® 7) and a remote PC or tablet.

# 7.2.1 Prerequisites

Your DS-NET-CPU already has Windows® 7 and DEWESoft® (including the DEWE-NET option) installed.

Note: in order to make a VNC connection you do not even need need to activate the DEWE-NET option in DEWESoft® – the important thing is just, that the Ultra VNC server software is installed and configured correctly (and this is done automatically when you activate the DEWE-NET option during the DEWESoft® installation).

HINT	The procedure is prepared and tested only for the DS-NET-CPU – it may not work on other PC's:
	▲ It will only work on Windows® 7 (e.g. Windows XP does not support Hosted WLAN)
	▲ User access control should be disabled
	\land Not all WLAN drivers support Hosted WLAN

Detailed information about the *Hosted Network* feature of Windows® 7 can be found here: <u>http://msdn.microsoft.com/en-us/library/dd815243%28VS.85%29.aspx</u>

# 7.2.2 Hosted Network on Windows 7

The hosted network feature of Windows® 7 creates a software-based wireless access point (AP) (sometimes referred to as a SoftAP) that uses a designated virtual wireless adapter. This allows the Windows® 7 PC to create a wireless network that other devices can connect to.

We have prepared some scripts that will handle all the setup work – you will find the scripts in the Extras\LAN\_HostedNetwork folder of your DS-NET-CPU installation USB stick.

The folder contains 3 script files – you just need to start the script ApplyHostedNetwork.bat as Administrator: See Illustration 20: First, hold down the SHIFT key and right-click the script ApplyHostedNetwork.bat. Then select Run as administrator from the pop-up menu.





- A Read the notes and press any key to continue
- Enter the SSID of the hosted network: e.g. DSNET\_CPU you will see the SSID in the list of available networks on your other PC or tablet
- Enter a password ② to access the network. For this demonstration we use a simple password dewesoft – you should use a more secure one! Take care: the password is case-sensitive!

When the script finishes successfully, everything is correctly configured and set-up. You should already see our new network in the *Network list* of the DS-NET-CPU (see Illustration 22 below).





#### HINT



If you ever want to deactivate the Hosted Network, just delete the StartHostedNetwork.bat script from the Startup folder and restart your PC.

<sup>2</sup> Note: this screenshot has been made on a German Windows® system where the Startup folder is called Autostart

# 7.2.3 Open a VNC connection

Once you have activated the Hosted Network on the DS-NET-CPU connecting to it is an easy 2 step process:

 Connect to the WiFi network: on your device (i.e. PC, Laptop, Smartphone, Tablet) search for WLAN networks and find the SSID that you have specified in the start-script : i.e. *DSNET\_CPU* in our example. Connect to this WLAN network using the password that you have specified in the start-script: i.e. *dewesoft* in our example. When you have problems, please consult the help-system of your operating system.
 Open a VNC program on your device and enter the required settings. Depending on the VNC program you must enter: IP address, port number, username and password. When you are on a Windows® operating system, we recommend to use Ultra VNC which is freeware and also

running on the DS-NET-CPU (see: <u>http://www.uvnc.com/</u>) When you are on Android<sup>TM</sup> or iOS<sup>TM</sup> you can find many VNC programs in the corresponding application store (i.e. Google Play<sup>TM</sup>, App Store<sup>TM</sup>).

- e.g. one program that has worked fine in our internal tests is Jump Desktop (http://jumpdesktop.com/)
- IP-address: is 192.168.173.1 (this is the default IP address of the hosted WLAN network that we have created on the DS-NET-CPU)
- A Port Number: the default port for VNC connections is 5900
- 👃 User Name: when the VNC program asks for a User Name, leave it empty
- A Password: the default password of the DEWESoft® VNC instance is the small letter a.

### 7.2.3.1 Android<sup>™</sup> Hints

Depending on your settings, the Android<sup>TM</sup> system may automatically close the WLAN connection with the message: *Network disabled because Internet connection is slow.* 

In this case you must deactivate the Auto network switch feature in the WLAN options.

# 7.3 System Recovery

This chapter will explain how to reset your DS-NET-CPU module to the state that it was in when it had been shipped to you. The disaster recovery USB stick is bootable and contains the recovery software and also the backup files of (aka. disk images) of the SSD-disk partitions:



Illustration 24: Recovery USB-stick

#### CAUTION



All data on the CPU storage will be overwritten by this procedure. If possible, backup all your data, before you restore the factory settings

# 7.3.1 Recovery Preparation

Attach the disaster recovery USB stick (see Illustration 24 above) to one of the USB connectors of the DS-NET-CPU modules (also possible via the USB-hub).

#### HINT



Make sure that the physical connection of the USB stick is correct. Most USB sticks have a small LED, which will be lit when the USB stick is connected.

Now power on the system (or restart it) and press the  $\boxed{F10}$  key immediately (you can also press the key multiple times) to enter the Device Boot Manager of the BIOS.

BUUI	
Please select boot devices:	Please select boot devices:
SATA : PORT 3 : Crucial_CT120M500SSD3 : PART 0 : Boot Drive USB : JetFlashTranscend 8GB 8.07 : PART 0 : Boot Drive	
↑ and ↓ to move selection	
Illustration 25: Boot Devices	

Select *USB* and press *Enter* to boot from the *Recovery Stick*.

#### HINT



When the boot procedure from the USB stick has finished, you will see this screen:



Illustration 26: Redo Backup startscreen

## 7.3.2 Restoring a partition

When you see the screen in Illustration 26 click on Backup or Restore to begin with the recovery procedure.

In the next screen called Welcome select Restore.

In Step1: Select Source Drive, select the disaster recovery USB stick which is labelled: Redo Backup and click Next.

In Step 2: Select Backup Image, select the image that you want to restore.

The SSD drive of the DS-NET-CPU module has 2 partitions:

System: A small partition (about 30GB) for the operating system called System which is shown as drive C: in Windows® Explorer.
The complete Windows® Operating system is stored on this partition. No DEWES of ® data files are stored.

The complete Windows® Operating system is stored on this partition. No DEWESoft® data files are stored here.

*Data*: A big partition called *Data* which is shown as drive *D*: in Windows® Explorer. DEWESoft® is installed on this drive and it is preconfigured to store also all its data files here.

You should see 2 image files called similar to these example names:

- 1. 20150528-partition1-c-system
- 2. 20150528-partition2-d-data

#### HINT



The first part of the file name is the date (Year, Month, Day) when the image has been created. So this part may be different on your USB stick.

Select the partition that you want to restore and click Next.

In Step 3: Select Destination Drive, you must select the SSD-drive where the image file will be copied to.

Here you must select the SSD-disk of your DS-NET-CPU which has Windows® installed.

#### CAUTION



When you restore the original partition you will lose all data that is currently stored on that partition. You should always make an external backup-copy of your data before you restore the original image.

Note, that you cannot select a partition here – only the hard-drive. You already have selected the partition that you want to restore in *Step 2: Select Backup Image*.

When you now click Next, you will see a warning dialogue.

#### This is your last chance to abort the operation.

If you are sure that all your settings are correct, press Yes to start the recovery process.

Be patient and wait until the progress bar reaches 100%. When it has finished you will see an info-box with the message: *Operation complete*. Click the **OK** button and then click the blue **Home** button on the left top of the screen to return to the start-up screen (see Illustration 26 on page 22). Now you can remove the USB stick, click the *Power Off* symbol, and then click **Restart** to reboot the DS-NET-CPU.

# 8 Appendix

# 8.1 Glossary and abbreviations

## BIOS

The BIOS of a PC software is built into the PC, and is the first code run by a PC when powered on (*boot firmware*). The primary function of the BIOS is to load and start an operating system.

## CAN

Controller-area network (CAN or CAN-bus) is a vehicle bus standard designed to allow micro-controllers and devices to communicate with each other within a vehicle without a host computer.

#### Dewesoft

Dewesoft refers to the company.

DEWESoft® refers to the software suite for data acquisition, data processing, data analysis and much more.

see www.dewesoft.com

### DHCP

The Dynamic Host Configuration Protocol (DHCP) is an auto configuration protocol used on IP networks. Computers that are connected to IP networks must be configured before they can communicate with other computers on the network. DHCP allows a computer to be configured automatically, eliminating the need for intervention by a network administrator.

In the absence of DHCP, hosts may be manually configured with an IP address.

## DS-GATE

The Dewesoft gateway module is the most important part of a DS-NET system, because it is responsible for all the communication between the DS-NET modules and the host system (The DS-NET-CPU module, in this case).



#### **DS-NET**

The Dewesoft networking measurement system (hardware) is a modular, highly flexible and industrial data acquisition system.

It consists of a DS-GATE communication module and up to 16 DS-NET modules. Optionally it can have a CPU module and also other special modules (e.g. CAN).



#### Ethernet

Ethernet is a family of frame-based computer networking technologies for local area networks (LANs).

The DS-GATE module can be connected via Ethernet to a host system (i.e. the DS-NET-CPU module which runs DEWESoft®)

#### GND

the electrical ground (aka. Earth)

#### HDMI

HDMI (High-Definition Multimedia Interface) is a proprietary audio/video interface for transferring uncompressed video data and compressed or uncompressed digital audio data from an HDMI-compliant source device, such as a the DS-NET-CPU module, to a compatible computer monitor or video projector. The DS-NET-CPU3 has a Mini HDMI connector.

#### Intel®

Intel® Corporation is an American technology company and the world's largest semiconductor chip maker, based on revenue. see www.intel.com

#### **IP** Address

Devices that are participating in the Ethernet must have a unique logical addresses: the IP (Internet Protocol) address.

#### LAN

A local area network (LAN) is a computer network covering a small physical area.

A LAN may use different communication technologies: e.g. Ethernet or wireless communication

### LED

A light-emitting diode is a semiconductor light source.

## LEMO

LEMO is the name of the high quality push-pull connectors that are used for cable connections: e.g. the power-supply cable and the sync cables of the DS-NET system. The company that produces these connectors is also called LEMO (<u>www.lemo.com</u>)



#### Microsoft®

Microsoft® Corporation is a public multinational corporation head-quartered in Redmond, Washington, USA that develops, manufactures, licenses, and supports a wide range of products and services predominantly related to computing through its various product divisions.

DEWESoft® is a Windows®-based application and thus a Windows® operating system must be installed on the measurement PC where DEWESoft® will run.

see www.microsoft.com

#### **NET** Option

aka. DEWESoft NET, DEWE NET

With DEWE-NET your measurement system can be controlled remotely with ease of use you couldn't imagine before. DEWE-NET also serves as the centre of Distributed Data Acquisition systems where you have multiple systems located either together or scattered across an entire continent. IRIG and GPS time will take care that data will stay synchronized, no matter how long the acquisition runs.

## OS

An operating system (OS) is a set of system software running on a device that manages the system hardware. Windows® is required for DEWESoft®.

## PC

The DS-NET-CPU is a full-fledged Personal Computer system, running Windows® and the DEWESoft® data acquisition software.

#### SSD

A solid-state drive (SSD) is a data storage device that uses solid-state memory to store persistent data. SSDs are distinguished from traditional hard disk drives (HDDs), which are electromechanical devices containing spinning disks and movable read/write heads. SSDs, in contrast, use microchips, and contain no moving parts. Compared to traditional HDDs, SSDs are typically less susceptible to physical shock, quieter, and have lower access time and latency.

Your DS-NET-CPU system comes with an internal SSD drive.

#### SSID

Service set identifier, or SSID, is a name that identifies a particular 802.11 wireless LAN.

#### USB

Universal Serial Bus is a specification to establish communication between devices and a host controller (usually PCs).

#### VNC

Virtual Network Computing (VNC) is a graphical desktop sharing system to remotely control another computer. The DEWE-NET option uses Ultra VNC.

#### WLAN

A wireless local area network (WLAN) links two or more devices using some wireless distribution method, and usually providing a connection through an access point to the wider internet. This gives users the mobility to move around within a local coverage area and still be connected to the network.

DS-NET-CPU comes with wireless network adapter and with a wireless network antenna.

#### Windows®

A PC operating system by Microsoft®. DEWESoft® will work on Windows® XP, Windows® Vista, Windows® 7 and Windows® 8.

Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

# 8.2 Documentation version history

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Version	[dd.mm.yyyy]	Notes
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