How to use GoPro camera with DewesoftX®

DEWESoft®

SOFTWARE USER MANUAL

MODULE V20-1

DEWESoft® X

1. Table of contents

2. About this document

This document is to instruct any DewesoftX® user on how to integrate GoPro cameras in both wireless and wired form. This instruction set will go over how to use an existing Wi-Fi network to create a wireless camera-based system and a wired connection similar to that of web-based cameras. GoPro has recently released a Beta software version for both the camera and Windows webcam application at the time of this release of this instruction that will allow GoPro Hero 8 and 9 to be used wired with a direct interface.

2.1. Legend

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

Important
It gives you important information about the subject.
Please read carefully!

Hint
It gives you a hint or provides additional information about a subject.

Example
Gives you an example of a specific subject.

3. GoPro action camera

GoPro cameras are one of the most often used action cameras for capturing the stunning moments of action sports. In regard to its compactness, ruggedness, and state of the art technologies, it is also extremely useful in data acquisition. Another silver bullet is its wireless connectivity that allows even easier mounting without complicated wirings that increases the possibility of problems during the acquisition.

The camera under the test was the GoPro Hero 9 Black edition. This manual presents the connection examples of GoPro action cameras. From GoPro 5 onward is a USB 2.0 (on PC) to USB C (on camera) connection, while older models had a mini USB connection. From GoPro 4 onward a live stream to PC or other media was supported, which also brought compatibility with DewesoftX® software.

Image 1: GoPro HERO 9 Black

Hint

For more information please visit our FAQ webpage and find a List of tested GoPro camera models.

4. Camera connection to Dewesoft

There are two options for connecting GoPro cameras with DewesoftX® software. You can connect the camera with the USB cable - wired connection, or you can transfer video data to the PC over the Wi-Fi connection - Wireless connection.

Video stream acquisition is performed on the basis of DirectX protocol which is commonly used for USB cameras, web cameras, and also integrated laptop cameras. DewesoftX can acquire the data on whether the DirectX video is supported.

4.1. Wired connection

4.1.1. Technical Overview

Connecting the camera to the PC can be performed with common USB cables that have a USB 2.0 to USB C connectors. For that we need the GoPro Webcam software which was released recently from GoPro and will constantly continue to improve its functionality. The software load is small and creates a small access icon on the toolbar allowing the flow of the video stream. DewesoftX® sees this as a DirectX video stream and integrates similar to other DirectX webcams. Frame rates are seen at 30 or 60 fps with some adjustability as detailed below. The Beta 8 version enables to choose FOV (Field of View) which offers to choose between Wide, Narrow, and linear FOV. We can choose between 1280x720 and 1920x1080 resolutions. The battery is charging when the camera is connected with a cable and isn't charging while active as a webcam.

Synchronization delay on the test was between 300 ms and 400 ms. We found that delay is not constant and depends on PC load, but we cannot define which scenario is the significant one. Be sure that you frequently update the GoPro software which may improve video stream conversion to DirectX.
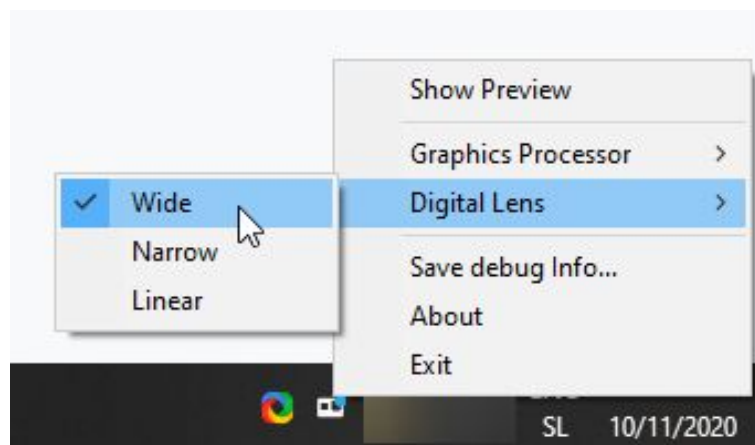

Image 2: FOV options and Preview for GoPro

Important

Note that some GoPro models have limitations while connecting the camera with the cable. Wired configuration is mostly dedicated to using a USB port that serves as an interface between the PC and the camera for data transfer. This port is fully protected from the outside environment when the camera is used as a standalone unit but opposite when you online stream the video to the PC. Therefore, consider that ruggedness is not the same as a fully enclosed camera.

4.1.2. Required Software

- Latest update on your GoPro camera (via the GoPro App or by a manual update)
- GoPro Webcam desktop utility (download and install from GoPro Webcam Beta (link is in the description of Facebook account). The recent version of the software at the time of writing this manual is GoPro Webcam 1.0.0.324 Beta 8. Be sure that you frequently check for updates.
- DewesoftX® latest release which is available on the download web page.

4.1.3. Connection setup

In the link is the official GoPro explanation by steps on how to connect your GoPro as a webcam How to Use Your GoPro as a Webcam. Following the instructions on the official GoPro website will guide you through the process on how to Update your GoPro.

Downloads for the files required are located within the Facebook group "GoPro Webcam Beta". As this is an unconventional approach to file management, GoPro is using this platform for beta management, feedback, and discussion which in these times is creative. Files can be downloaded and transferred along with multiple usages are permitted with a single download. The most current versions of the beta are released on the web page with notes.

Webcam app installation from the link above will install the webcam interface. This is still a beta installer of a software suite, with a small application that will reside within the toolset in the bottom right corner of your Windows icon tray similar to the one seen below.
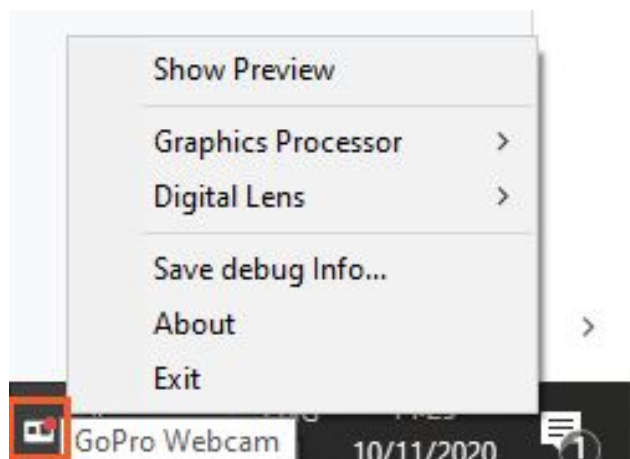

Image 3: Access icon on the toolbar

Open **DewesoftX®** Software Options 🡒 Settings, then press the Add button over Operation mode column opening screen on the image below.
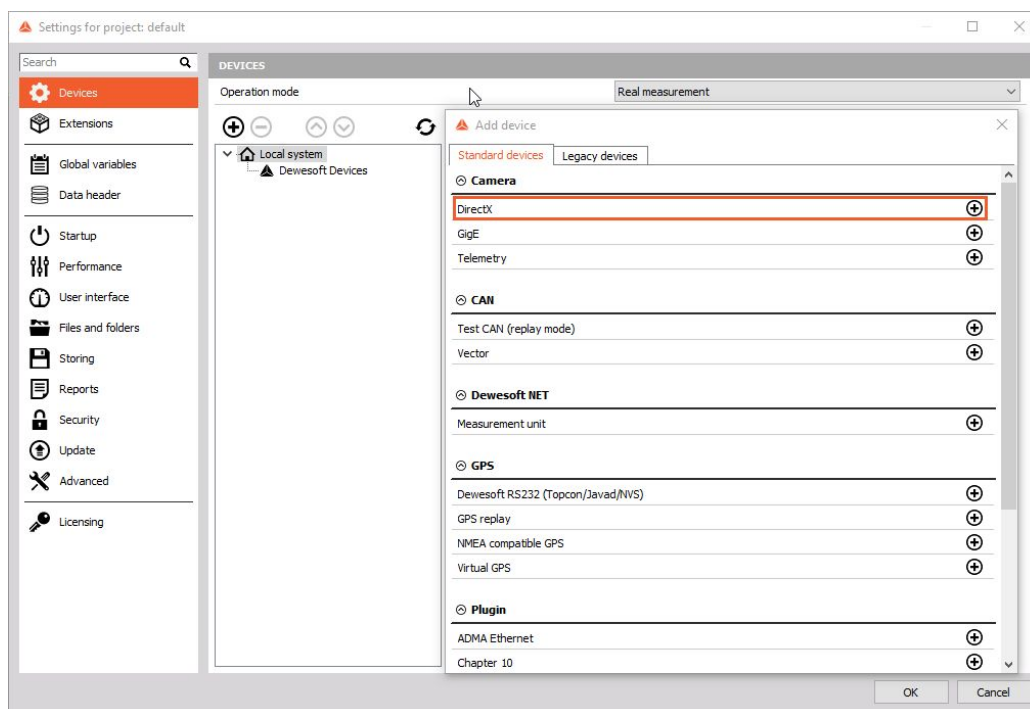
Image 4: Setting up plugin DirectX for webcam

That will attach the available cameras to the Operation mode under your Local System similar to the image below.
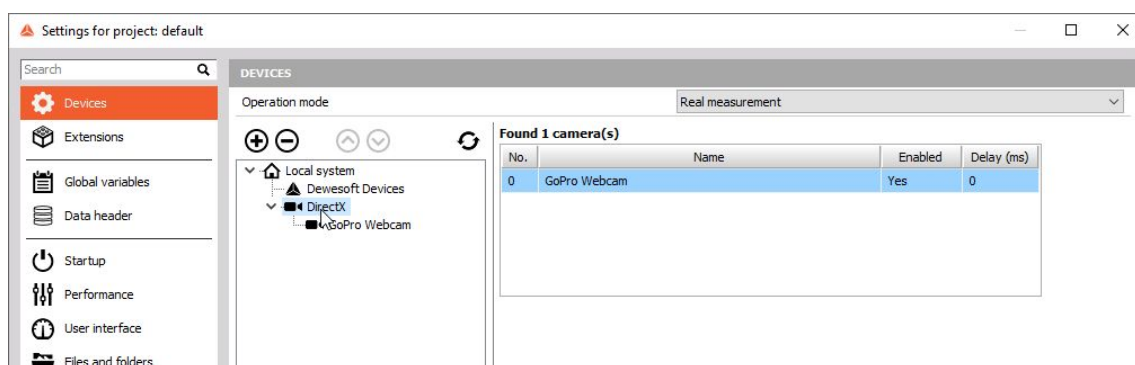
Image 5: GoPro shown in Local System like a webcam

💡 **Hint**

For additional information about DirectX setup check an online Pro Training of <u>How to connect a webcam</u>.

4.2. Wireless connection

4.2.1. Technical Overview

Wireless connection with GoPro is not a direct integration at this time and will require two additional pieces of hardware and software. The use of a Real-Time Messaging Protocol (RTMP) is how the

integration is accomplished. The camera will broadcast the live stream to a device (tablet, phone) that has the GoPro app installed. This will collect the video stream and then broadcast the RTMP signal to a computer via Wi-Fi. The measurement PC, which is on the same Wi-Fi will then have a third-party app (gopro2webcam) that will link the RTMP, decode, and then convert to DirectX format for input into DewesoftX®. We can choose between 1080, 720, and 480p resolutions and the frame rate with all formats automatically sets to 30 fps, without chance of changing it.

Synchronization of wifi connection comes with 1-1.5 second delay, that depends from fue variables such as (health of internet and bluetooth connection, resolution ratio, FOV, etc.). Be sure that you frequently update the GoPro software which may improve video stream conversion to DirectX.

Hint

In testing the fps was getting to 25 and not more, make sure that you have the latest required software versions which is crucial for getting the optimum performance.

Important

GoPro Hero 9 Black edition was the only camera under Wi-Fi connectivity test. External reports say that previous generations may work as well. As long as we haven't tested them we can guarantee only for the GoPro Hero 9 Black edition. You can find the list of tested GoPro models with Dewesoft on the online article.

4.2.2. Required Software

- Latest update on your GoPro camera (via the GoPro App or by a manual update)
- GoPro2webcam desktop utility (payable version from gopro2webcam)
- GoPro app on a mobile or similar device for live stream via Wi-Fi connection (found in application store of your mobile device)
- DewesoftX® latest release which is available on the download web page.

4.2.3. Connection setup

1) Establish a Wi-Fi connection between the computer and the device running the GoPro App, ensuring they are on the same network.

2) Follow the instructions for installation of the GoPro App onto the device paired with the camera located within the proper app store for the device that it will be installed on.

3) Upon completion, the GoPro App will prompt you to connect the camera to the app. Follow the on-screen prompts to establish the connection. The successful pairing will then show on the app what the camera is viewing.
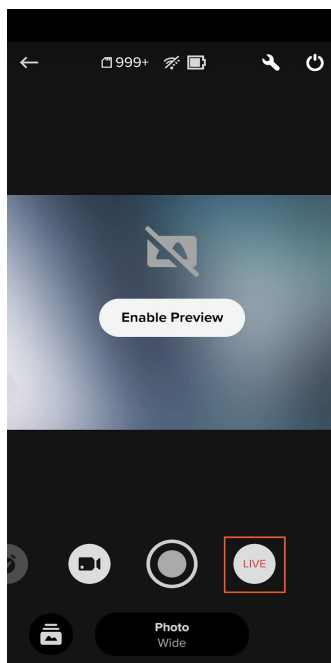
Image 6: Choose LIVE when phone and GoPro are connected

4) Within the app, there will be options on the lower part of the screen. One will be "LIVE", select that choice as shown in the image above.
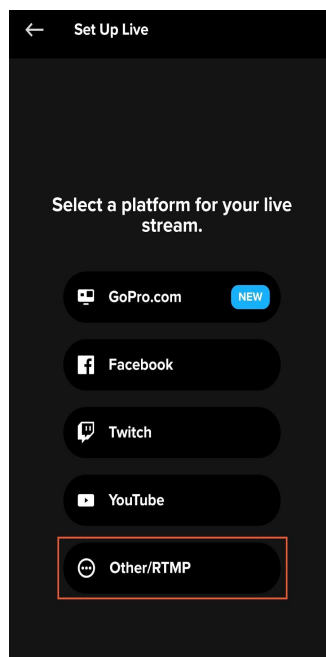

Image 7: Chose Other/RTMP

5) A setup screen will then appear with options. Keep this screen open at the time you are transferring the video to the collecting PC.

6) At this time, you will open the "webcam tool for action cameras" within the Windows menu.
      a. A dialog box will appear with camera selection, select the proper camera to be used
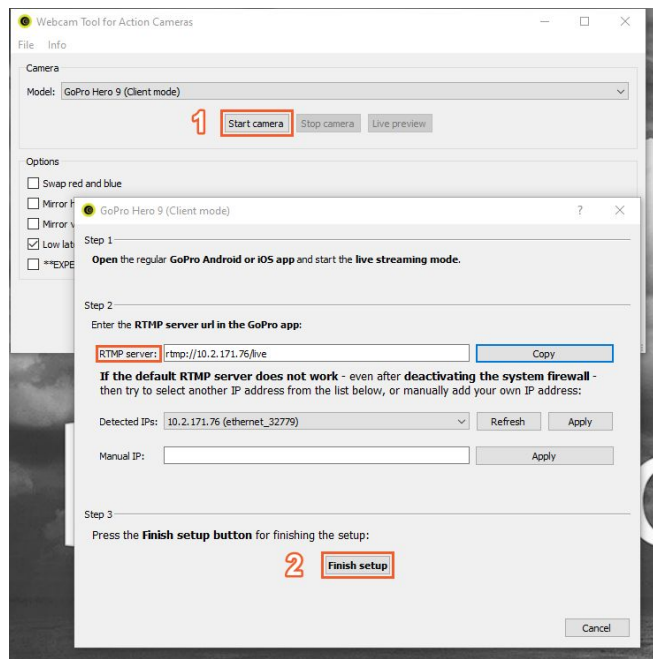
Image 8: Webcam tool for action cameras setup

b. Once that is selected, pres start the camera and a new window will appear with an RTMP address that will look like: RTMP://xx.xx.xx/live
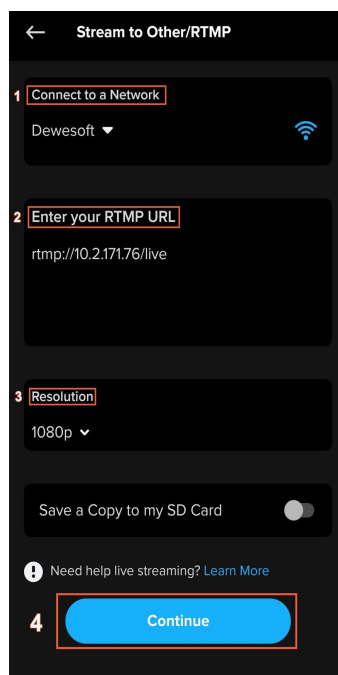
Image 9: RTMP setup in the GoPro app on a mobile device

c. Go back to the GoPro App and enter this address into the GoPro live setup screen. As shown in the image above.

7) Press "Continue" on the app once this RTMP address is entered along with the Wi-Fi network.

Hint
An additional feature is allowing all video to be saved to the phone at the same time if desired.
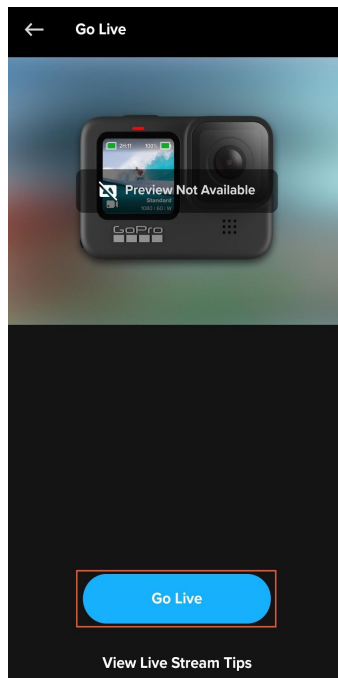
Image 10: The last thing to wireless connection is to hit "Go Live"

8) Return to the software and press "Finish setup" or if you did that before, just press "Go Live" in the app.

9) At this point, there will be a connection established between the App and the computer. The app will now display a stream health monitor showing strength. And the software will give you the option to Live preview.

Image 11: Live preview on pc

10) From the point, a virtual camera is now an option within DewesoftX® and will be handled the same as a DirectX Camera.

Image 12: Measurement in DewesoftX®

> **Important**
> Required softwares are still in developing stage, which means that delay between video frames and analog data acquired in DewesoftX does not reflect the final state. Be sure that you frequently check for the updates which may significantly increase the performance of the communication.

5. Websites, issues, and FAQ
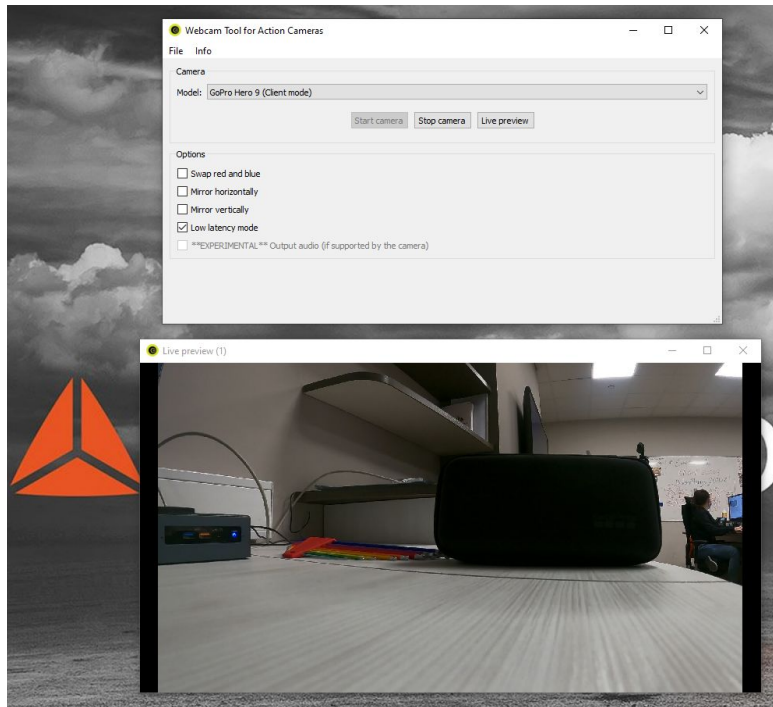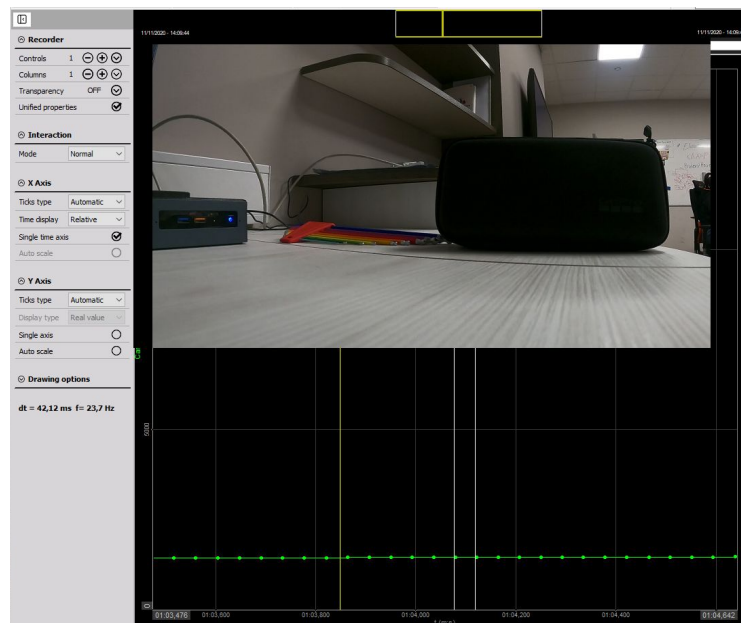
5.1. Website references for online instructions and required software links

www.GoPro.com
GoPro General website

https://www.facebook.com/groups/goprowebcam
Facebook community page where GoPro releases their GoPro Webcam Beta software.

https://community.gopro.com/t5/en/How-to-Use-Your-GoPro-as-a-Webcam
Instructions on how to use your GoPro as a Webcam

https://gopro.com/en/us/news/how-to-live-stream-on-gopro
GoPro instructions ongoing live

https://gopro.com/en/us/shop/softwareandapp
GoPro Apps page and software link

https://download.dewesoft.com/list/manuals-brochures/how-to-guides
Dewesoft Manual library with How to guides

https://www.gopro2webcam.com/
RTMP conversion software required on Dewesoft computer end

https://dewesoft.freshdesk.com/a/solutions/
List of tested GoPro camera models in DewesoftX®

5.2. System requirements

- GoPro Webcam desktop utility: Windows 7/8/10 (both 32 bit and 64 bit supported) and 6mb of free space
- GoPro2Webcam software: Windows 7/8/10 (both 32 bit and 64 bit supported) and 60mb of free space
- GoPro App requirements: A device that has wireless connectivity (Android or iOS)

5.3. Noted issues and FAQ:

Problem: Video Pixelated
Solution: Wireless, try to disconnect and reconnect and ensure proper Wi-Fi strength.

Problem: Buffer Overrun in DS software
Solution: Lower resolution from 1080 which is default

Problem: 32 bit not supported in either mode
Solution: As few systems are using 32, software from GoPro will not support a 32-bit system and a buffer overrun will occur when using 32 bit DS software.

Problem: Flashing Image on the preview and on the camera itself
Solution: Go to Preferences - general - Anti-Flicker and set to 50Hz or 60Hz

6. Warranty information

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

Note:
Dewesoft d.o.o. shall not be liable for any errors contained in this document. Dewesoft MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWESOFT SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Dewesoft shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

The 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 https://dewesoft.com/support/distributors.

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.

Dewesoft d.o.o.
Gabrsko 11a

1420 Trbovlje Slovenia

Europe Tel.: +386 356 25 300
Web: http://www.dewesoft.com
Email: Support@dewesoft.com
The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

Service/repair

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 on https://dewesoft.com/support/rma-service.

Restricted Rights

Use Slovenian law for duplication or disclosure. Dewesoft d.o.o. Gabrsko 11a, 1420 Trbovlje, Slovenia / Europe.

Printing History

Version 2.0.0, Revision 217 Released 2015 Last changed: 23. July 2018 at 16:54.

Copyright

Trademarks

We take pride in our products and we take care that all key products and technologies are registered as trademarks all over the world. The Dewesoft name is a registered trademark. Product families (KRYPTON, SIRIUS, DSI, DS-NET) and technologies (DualCoreADC, SuperCounter, GrandView) are registered trademarks as well. When used as the logo or as part of any graphic material, the registered trademark sign is used as a part of the logo. When used in text representing the company, product or technology name, the ® sign is not used. The Dewesoft triangle logo is a registered trademark but the ® sign is not used in the visual representation of the triangle logo.

Safety instructions

Your safety is our primary concern! Please be safe!

Safety symbols in the manual

! Warning
Calls attention to a procedure, practice, or condition that could cause the body injury or death

Caution

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

General Safety Instructions

! **Warning**

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 an 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 its end of life! Please recycle this product in an appropriate way to avoid 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 www.dewesoft.com

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 of our environment and the product is lead-free.

General safety and hazard warnings for all Dewesoft systems

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.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use higher supply voltage than specified!
- Use only original plugs and cables for harnessing.

- You may not connect higher voltages than rated to any connectors.
- The power cable and connector serve as Power-Breaker. The cable must not exceed 3 meters, the disconnect function must be possible without tools.
- 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 advice for using the system.
- 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.
- 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.
- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- 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.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorized personnel only.
- Adverse environmental conditions are Moisture or high humidity Dust, flammable gases, fumes or dissolver Thunderstorm or thunderstorm conditions (except assembly PNA) Electrostatic fields, etc.
- 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-circuiting, fire or electric shocks.
- 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 the 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.
- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore if the system is damaged obviously or causes strange noises. The system does not work anymore. The system has been exposed to long storage in adverse environments. The system has been exposed to heavy shipment strain.
- Warranty void if damages caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized 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.

- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- 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, transmitting antennas or high-frequency generators, for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!
- Do 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.
- The electrical installations and equipment in industrial facilities must be observed by the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use in 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 advice of the connected systems.
- This product has left the factory in safety-related flawlessness and in proper condition. In order to maintain this condition and guarantee safety use, the user has to consider the security advice 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 the protection of buildings, are excluded from the scope of IEC 61326-3-1.

Documentation version history

Version	Date	Notes
V20-1	20.11.2020	Tested GoPro hero 9 black edition camera, Updated version of GoPro webcam beta to beta 8, Added images of individual processes