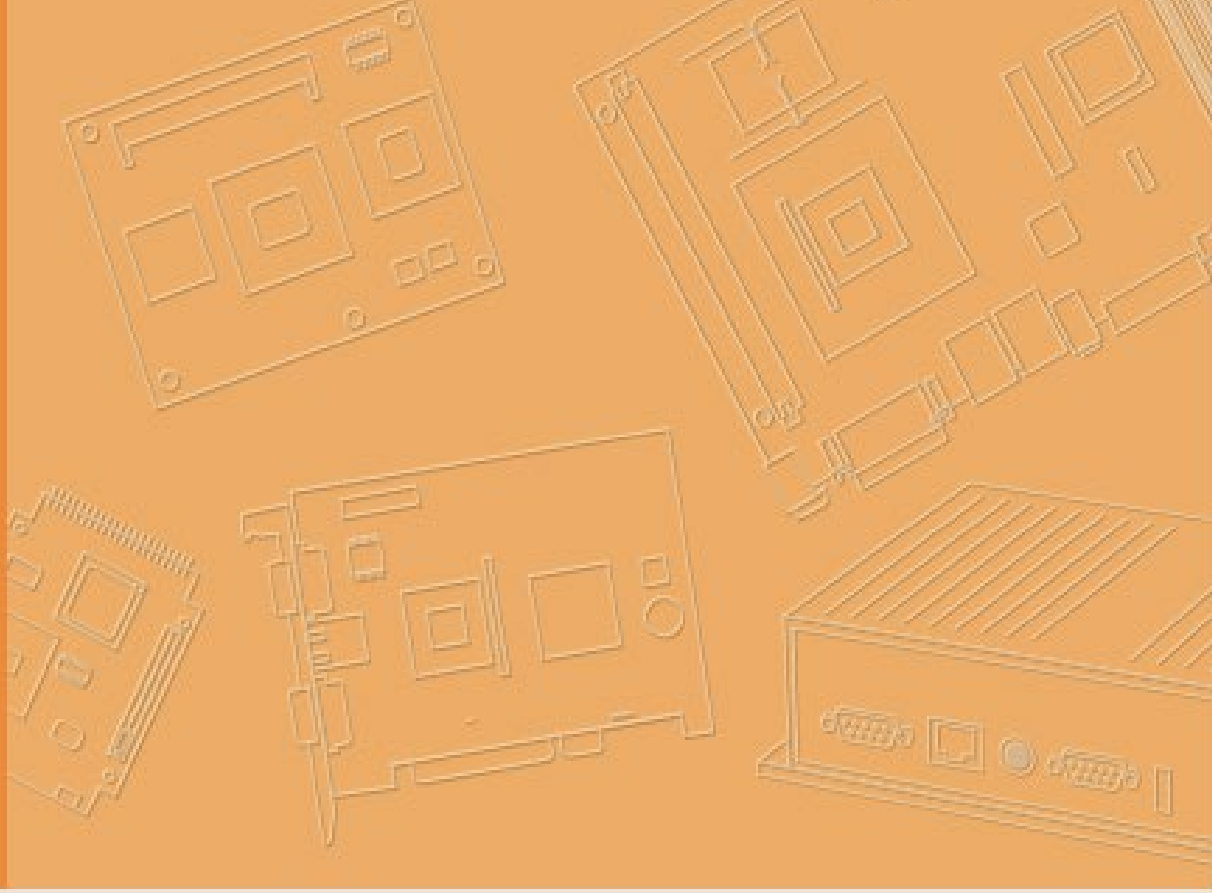
User Manual



DLT-V73 Series

Industrial Computer

ADVANTECH

IMPORTANT:
For safe and proper use, follow these instructions.
Keep them for future reference.

Manual version

Manual version: V2.30
Completed on: March 26, 2025

Revision History:

Version	Date	Manual modifications
V1.00	July 13, 2023	Description DLT-V73 Series Models DLT-V7310P/R, V7312P/R/D und V7312P+
V2.00	June 11, 2024	Japan's Radio Approval changed to TELEC MSuite added Scanner: Power supply 5V or 12V UEFI bei USB Recovery Stick added Link EU Declaration of conformity changed AddOn Modules updated Battery pack specifications changed Model DLT-V7310D added Installation sequence for mounting bracket with additional accessory removed Power Consumption defroster added EU Declaration of conformity added in certificates
V2.10	July 23, 2024	USB Type-C cable length 90 cm added AddOn Modules updated Radio Approvals for WLAN and WWAN updated
V2.20	November 20, 2024	Hole depths for VESA drill holes updated DLT-V7310D and DLT-V7312D added for EU declaration of conformity Frequency table updated WLAN Radio card Qualcomm WMX7205-0 added WWAN Radio card Quectel EM05-G added
V2.30	March 26, 2025	Attach cable cover – instructions updated Taoglas WLAN antenna added Rubber Seal - Diameter of the cable passages added

Copyright

Acknowledgements

Manufacturer

Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

Simplified EU declaration of conformity

The manufacturer:
Advantech Co., Ltd.
No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

The importer:
Advantech Europe B.V.
Science Park Eindhoven 5708, 5692ER, Son en Breugel, The Netherlands

Hereby, Advantech Co., Ltd. declares that the radio equipment type
DLT-V73XXXXXXXXXXXXXXX,
DLTV73XXXXXXXXXXXXXXX,
DLT-V7310PXXXXXXXXXXXXXXXX,
DLT-V7312PXXXXXXXXXXXXXXXX,
DLT-V7310DXXXXXXXXXXXXXXXX
DLT-V7312DXXXXXXXXXXXXXXXX

(X=0-9, A-Z, a-z, Any character, “-” or blank)
is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:
EU Declaration of Conformity

Technical customer support

Contact your distributor, sales representative, or an Advantech Service Center for technical support.

Please have the following information ready:

- Product name
- Serial number
- Description of your peripheral attachments
- Description of your software (operating system, application software, etc.)
- The exact wording of any error messages
- A complete description of the problem

Find the contact data of our Global Advantech Service Centers on our website:
https://erma.advantech.com
You can find this return shipment form on page 187

Advantech Europe B.V. Service & Support
Email: helpdesk.munich@advantech.de
Phone: +49 (0)89 / 41 11 91 999

Initial inspection

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately:

- DLT-V73 Industrial Computer
- Cable cover, cable sealing set and cable fastening material
- Product supplement (printed Startup-Manual for DLT-V73, contains Safety Notes and QuickStart guide) and possibly “OS End User License Agreement” (depends on optional OS type)
- Optional accessories (e.g., uninterruptible power supply (short: UPS), Adapter cable Type-C to USB 3.0A (cable length 90 cm), power supply cable)

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the device mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt.

1. As you unpack the device, check it for signs of shipping damage. For example: box damage, scratches, dents, etc.
2. If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately.
3. Also, please notify the carrier. Retain the shipping carton and packing material for inspection by the carrier.

After inspection, we will make arrangements to repair or replace the unit.

A message to the customer

We want you to get the best performance possible from your products.

If you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone.

Please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and can be easily solved over the phone.

In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice about application requirements or specific information on the installation and operation of any of our products.

Contents

1. Introduction

1.1. About the DLT-V73 manuals

NOTE

Pay attention to the DLT-V73 manuals because they help avoid hazards, reduce repair costs and downtimes, and increase the reliability and service life of the DLT-V73.

Keep the manuals for future use.

Please contact Advantech if you require additional information or clarification. You can find the contact address in section Technical Customer Support.

The latest versions of our manuals are available on our websites:

www.advantech.com

1.1.1. Manuals for all DLT-V73 models

The following manuals are available for all DLT-V73 device models:

Manual type	Contents	For target group	Availability
Startup Manual	Safety instructions, First commissioning: mechanical mounting and electrical installation	Skilled personnel	Printed, enclosed with the device
User Manual	Complete operating instructions	Skilled personnel	PDF file on our websites

Startup Manual and User Manual apply to all models of the DLT-V73 Series:

- DLT-V7310 P (PCAP-Touch)
- DLT-V7310 R (Resistive-Touch)
- DLT-V7310 D (Defroster Resistive-Touch)
- DLT-V7312 P (PCAP-Touch)
- DLT-V7312 R (Resistive-Touch)
- DLT-V7312 D (Defroster Resistive-Touch)
- DLT-V7312 P+ (PCAP-Touch)

1.1.2. Further available manuals

Manual	Contents	OS	For target group	Availability
MDevice	Configuration description	MS Windows	Skilled personnel	PDF file on our websites www.advantech.com
MKeyboard	Configuration description	MS Windows	Skilled personnel	PDF file on our websites www.advantech.com
ADV Linux	OS and configuration	Linux	Skilled personnel	Upon request, please contact our Technical Customer Support

1.1.3. Abbreviations used

Term	Abbreviation
Lithium-ion battery pack	Battery pack
MS Windows	MS Win
MS Windows 10 IoT Enterprise LTSC	Win10IoTEnt
MS Windows 11 IoT Enterprise	Win11IoTEnt
Operating System	OS
Projected-capacitive	PCAP
Uninterrupted Power Supply	UPS

1.1.4. Design elements used in the manuals

Safety notes and other notices

<Signal word> ***Damage to persons***

*Signal word **DANGER** means that death or severe bodily injury will occur if this information is not observed.*

*Signal word **WARNING** means that death or severe bodily injury can occur if this information is not observed.*

*Signal word **CAUTION** means that slight bodily injury can occur if this information is not observed.*

NOTICE ***Prevent system malfunction and property damage***

Information about possible property damage to avoid damaging hardware or losing data

NOTE *Notes provide optional additional information*

1.1.5. Text formatting conventions

Subject	Formatting	Example
Lists	Bullet points	• Part 1 • Part 2
Instructions	Numbers	1. Copy file … 2. Rename file …
Product names	Normal, not highlighted	Software MDevice is a setup tool for …
Buttons in software dialogues	**Bold**	With button **Next** …
Texts, parameters in software dialogues	**Bold**	Parameter setting **ID-Test** should be …
Placeholder for a variable	<x> value in angle brackets	Value <x> depends on …
Syntax, Strings	`Courier New Size 11`	The `AT` prefix must be set.
Keyboard keys	In capital letters, sequence with +	CTRL + ALT + DEL
Cross reference to other manual chapters	Text in *italics, underlined*	Please refer to manual section *1.1 Examples*
Program files File names Directories	In quotation marks	File “quectel.exe“ … In directory “C:/Program Files” ….
Links	Underlined, blue	Website https://www.advantech.com

2. Safety Chapter

2.1. Please read and observe

These safety instructions apply to all device models in the DLT-V73 Series: For DLT-V7310, DLT-V7312 and DLT-V7312P+ in various equipment levels.

WARNING

Non-observance of the safety instructions can result in injury to persons and in physical damage, e.g., due to incorrect commissioning procedures or due to maintenance work not being completed. The manufacturer accepts no liability for damage resulting from a failure to comply with this information.

Read and observe these safety instructions before commissioning and using the DLT-V73. This protects you and other persons and prevents damage to the equipment and to technical equipment in the surrounding environment.

2.2. Requirements for commissioning and operating personnel

Commissioning and maintenance

Work such as commissioning and maintaining the DLT-V73 is only permitted to be performed by skilled personnel who have specialist vocational training and who have up-to-date knowledge and experience in the area of work in question.

Examples:

- Mechanical mounting work must be performed by skilled mechanical personnel.
- If the DLT-V73 is incorrectly mounted onto vehicles, for example, this can result in serious accidents.
- Electronic work on the DLT-V73 must be performed by skilled electronics personnel; there is a risk of electric shock when connecting to the power supply, for example.
- For the DLT-V73 with integrated UPS, specialist knowledge on the handling of battery packs is required.

Requirements for the operating personnel

Users of the DLT-V73 must be trained by skilled personnel and instructed in the operation of the device. All users must be familiar with all functions of the product they come into contact with.

2.3. Battery pack safety

The DLT-V73 is optionally available with an integrated UPS. The battery pack of the UPS is located in the battery pocket of the device under the antenna cap.

Fig. 2-1: Battery pocket with UPS DLT-V73

EXPLOSION HAZARD! BATTERY PACK SAFETY NOTE

Battery packs may ignite if stored or handled incorrectly (fire risk, explosion risk), and may cause chemical burns or release poisonous substances.

1. Handle the DLT-V73 and the integrated battery pack with care, and do not allow it to become damaged, to fall or be dropped, or be short-circuited.
2. Do not tamper with, disassemble or repair the battery packs.
3. Observe the specified temperature range, both during storage and in the work environment.
4. Do not utilize the device near sources of heat or fire, open flames or heaters.
5. Do not allow water or other liquids to come into contact with the device (exercise particular caution with corrosive liquids).
6. Suitable fire extinguishers must be provided in line with safety regulations.
7. If battery packs become damaged, caustic electrolyte liquid may leak out. This liquid must not under any circumstances be permitted to come into contact with eyes, skin or clothing. On contact with eyes or skin, rinse immediately with clear, running water and consult a doctor.

THERE IS A RISK OF EXPLOSION IF THE BATTERY PACK IS SWAPPED OUT AND REPLACED WITH AN INCORRECT/NON-APPROVED BATTERY PACK.

This also applies to the real time clock battery installed in the DLT-V73.

Do not open the DLT-V73, and do not replace the RTC battery.

1. No third-party battery packs permitted. Use only original battery packs from Advantech. If battery packs from other manufacturers are inserted in the DLT-V73, the warranty for this device will be rendered void.
2. The battery packs must be certified for the DLT-V73.
3. Do not use battery packs from any other Advantech devices; they are not compatible.

Prevent physical damage due to deep discharge.

Storing the battery packs incorrectly will cause them to discharge completely (deep discharge) and thus damage them irreparably.

To prevent a deep discharge:

1. Remove the battery pack from the battery pocket, if the DLT-V73 is not used for a longer period of time (more than one month).
2. Charge the battery pack in the DLT-V73 device every six months.

2.4. HF Radiation

Only applies to devices with radio equipment: Danger of radiation.

DLT-V73 devices with radio equipment emit high frequency energy (abbreviation: HF).

To protect persons and domestic animals against HF radiation:

1. Mount the DLT-V73 so that persons and domestic animals maintain a minimum distance of 20 to 50 cm from the radio antennas.
2. Ensure that persons observe this minimum distance when operating the DLT-V73.
3. High frequency energy can interfere with technical devices. For this reason, do not use the DLT-V73 in the vicinity of pacemakers or other medical devices.
4. Only operate the DLT-V73 with radio equipment that is approved by the manufacturer for this device.
5. Make sure that the transmission power and the radio frequency of the DLT-V73 comply with the regulations for the respective country where the device is deployed.
6. Observe all applicable regulations for your deployment location/country with regard to operating channels, radio frequencies and the maximum permissible transmitting power. Responsibility for this lies with the company operating the DLT-V73. The regulatory authorities in the relevant country can provide information on this.

Any modifications to the DLT-V73 radio equipment which are not expressly approved by the party responsible for the compliance can lead to the withdrawal of the operating license for this device.

2.5. Information on safe mounting

During the mounting process

The DLT-V73 can fall down and cause injuries due to its weight.

1. Use the assistance of a second person for installation work.
2. Always hold the DLT-V73 by the housing with both hands.
3. Never use the antenna cap as a handle as it may break due to the weight involved.

The strain relief rail of the DLT-V73 can have sharp edges and cause cutting injuries.

1. Do not hold the DLT-V73 by the strain relief rail.

Choosing the mounting position and installation environment

1. The installation height of the device shall not exceed 2 m.
2. The ergonomic operability of the DLT-V73 should be taken into account when selecting the mounting position.
3. Mount the DLT-V73 in such a way that no persons can be injured if the device mounting should break (e.g., as a result of a fatigue fracture).
4. Otherwise, it is essential to adopt corresponding safety measures.
5. Ensure that the installation environment is correct, as is not permitted to result in an enclosed system because the cooling concept of the DLT-V73 requires fresh air. Without a supply of fresh cooling air, the DLT-V73 may overheat and may be damaged beyond repair.

Specific information on vehicle mounting (forklifts, etc.)

1. Mount the DLT-V73 so that the driver's field of view remains clear and safe driving operation is guaranteed.
2. During the mounting process, observe the requirements of the vehicle manufacturer relating to attaching auxiliary devices and connecting auxiliary consumers.
3. Observe all requirements relating to welding or drilling on support components of the vehicle.

2.6. Information on safe electrical installation

Danger of electric shock

1. Do not put the DLT-V73 into operation if it is showing damage.
2. Do not open or modify the DLT-V73.
3. Only connect or disconnect electrical connections when the device is in a de-energized state.
4. Use only original Advantech power supply cables; these meet the specific requirements for low-temperature flexibility, UV resistance, oil resistance, etc.

Installing the disconnecting device

The DLT-V73 is not equipped with disconnecting devices that are accessible from the outside; it does not have switches.

1. To allow the device to be quickly disconnected from the power supply in emergency situations, install an easily accessible disconnecting device close to the device.
2. Ensure that the disconnecting device isolates all supply lines.

Fuses

1. Only connect DLT-V73 devices to Safety Extra Low Voltage (SELV) circuits.
2. The DC+ connecting cable must be protected by a fuse (30 AT max.).
3. The ignition connecting cable must be protected by a fuse of the following type: 5x20 mm T 125 mA L / 250 V, for example, a Wickmann 195-125 mA / 250 V.

Power supply unit fuse blows repeatedly

If the fuse of the integrated power supply unit blows again immediately after replacement, proceed as follows:

1. Check the electrical installation.
2. If it’s excluded that a faulty installation causes the problem:
   Send in the DLT-V73 immediately for repair.

2.7. Safety during ongoing work operations

Users of the DLT-V73 must be trained by skilled personnel and instructed in the operation of the device. All users must be familiar with all functions of the product they come into contact with.

General

1. Do not use the DLT-V73 in explosion hazard areas.
2. Switch off the DLT-V73 if located in the vicinity of petrol stations, fuel depots, chemical plants, etc.
3. Switch off the DLT-V73 before using the interfaces underneath the antenna.
4. Switch off the DLT-V73 before replacing the battery pack.

The following applies when using the DLT-V73 on vehicles:

The vehicle driver is not permitted to operate the DLT-V73 while driving. Operating the device can represent a distraction from driving operations and there is an increased risk of accident.

The DLT-V73 must be disconnected from the vehicle battery while the vehicle battery is being charged. Or it must be ensured that the maximum permitted input voltage of the DLT-V73 is not exceeded.

2.8. Regular maintenance work

Please read manual section *17 Maintenance*.

2.9. Repairs, modifications

Only authorized Advantech Service Centers may perform the following:

- Open the device (front unit and base unit)
- Repairs
- Modifications
- Replace integrated modules, e.g., radio cards

The device operator may perform the following (only qualified skilled personnel):

- Opening/closing the antenna cap (e.g., for replacing CFast card and SIM card)
- Opening/closing the WLAN Diversity Antenna to replace the battery pack
- Opening/closing the cable cover

The legal warranty shall apply. It expires if the customer performs measures on the device that are only permitted to be performed by Advantech Service Centers.

Accessories and peripherals

Accessories and peripherals may only be installed or integrated if expressly approved by Advantech for the respective DLT-V73. If other parts are attached or installed and connected, claims for warranty and / or product liability will be lost.

THERE IS A RISK OF EXPLOSION IF THE BATTERY PACK IS SWAPPED OUT AND REPLACED WITH AN INCORRECT/NON-APPROVED BATTERY PACK.

2.10. Recycling information

Fig. 2-2: Recycling information icons

DLT-V73 devices and lithium-ion batteries are recyclable; they may not be disposed of with general/domestic waste. They must be disposed of properly in accordance with local regulations.

Please contact the responsible authorities in your country/region to find out about the applicable regulations for proper disposal, if necessary.

3. Functional Description

3.1. Intended use

DLT-V73 Industrial Computers are data communication terminals for use in commercial industries such as logistics, warehousing and manufacturing. Any other or additional use beyond this is regarded as improper use.

DLT-V73 Industrial Computers are only permitted to be operated:

- In accordance with the defined intended use.
- Within the usage limits and in accordance with the technical data.
- Observing the information in the documentation and in particular the safety and warning notices.

DLT-V73 Industrial Computers:

- Are not approved for use in explosion-hazard areas.
- Are not approved for use on ships.
- Are not approved for use on rail vehicles.
- Are not approved for use in life-support systems or critical safety systems where system malfunction can lead to the direct or indirect hazard of human life.

DLT-V73 Industrial Computers were designed and built according to modern technology and accepted safety regulations. Improper use can result in injury to persons and in property damage, however, necessitating the following:

- Correct transport, storage, commissioning and maintenance as specified
- Operation by trained personnel

Accessories

Only use accessories that have been tested and certified for the respective DLT-V73.

Requirements for safe operation

- Proper transport and storage
- Proper setup and use
- Proper maintenance and service
- Operation by trained personnel

3.2. Mount, operate and service the device correctly

DLT-V73 Industrial Computers were designed and built according to modern technology and accepted safety regulations. However, the operation of the DLT-V73 can endanger personnel or third parties and cause damage to the device and other material assets when, for example, the device is

- Installed incorrectly or configured improperly
- Operated by untrained or uninstructed personnel
- Improperly operated and maintained
- Not used as intended

The owner/operator commitments with regards to safety (accident prevention regulations, occupational safety) are to be followed.

3.3. Device identification / product label

The name plate on the rear side of the DLT-V73 must be legible at all times.

Do not damage the name plate or remove it from the device.

Information on the labels on the device (examples):

- Model name
- Serial number
- FCC ID (Radio)
- Barcode (for Advantech-internal use only)

4. Unpacking, Storing

4.1. Packing list

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately:

- DLT-V73 Industrial Computer
- Cable cover, cable sealing set and cable fastening material
- Product supplement (printed Startup-Manual for DLT-V73, contains Safety Notes and QuickStart guide) and possibly “OS End User License Agreement” (depends on optional OS type)
- Optional accessories (e.g., uninterruptible power supply (short: UPS), Adapter cable Type-C to USB 3.0A (cable length 90 cm), power supply cable)

4.2. Unpacking

1. Open the packaging carefully to prevent damaging the device inside.
2. Save the packaging material (for possible forwarding transports or returns of the DLT-V73).
3. Check the shipment for completeness and any possible damage.
4. Always keep the supplied manuals and documents.

4.3. Transport

WARNING ***Risk of personal injury due to weight and sharp-edged parts***

The DLT-V73 can fall down and cause injuries due to its weight.

The strain relief rail can have sharp edges and cause cutting injuries.

1. *Always hold the DLT-V73 by the housing with both hands.*
2. *Never use the antenna as a handle. It can break due to the weight involved.*
3. *Do not hold the DLT-V73 by the strain relief rail.*
4. *Use the assistance of a second person for installation work.*

4.4. Storage

WARNING

Personal injury from integrated UPS battery pack: Short-circuit, fire, chemical burns, toxic substances

Some DLT-V73 devices contain an integrated UPS with a battery pack (hereinafter referred to as "battery pack"). These can ignite (risk of fire), cause chemical burns or release toxic substances.

1. *Observe manual section 2.3 Battery pack safety regarding DLT-V73 devices with integrated UPS.*
2. *Store battery packs separately from acids and other materials.*
3. *Store the DLT-V73 and accessories in a cool and dry location and comply with the specified storage temperature and air humidity.*
4. *Provide for sufficient ventilation of the storage location.*
5. *Do not store the device near sources of heat or fire, open flames or heaters.*

Protecting touchscreens during storage

1. Protect touchscreens from sharp edges, impacts, and heavy objects.
2. If stacking, do not stack higher than four devices.
3. Place devices front-to-front in this case. The VESA mounting point on the rear side of the device can damage the touchscreen of another device.
4. Use protective material (non-flammable!) between the devices as a precaution.

5. Technical Data – Device

5.1. General

NOTE *The latest status of technical data is available in the DLT-V73 data sheets on our websites.*

CPU

CPU Generation Cache	Intel® Core™ i5-1145GRE quad-core, 1.5 GHz Intel® Celeron® 6305E dual-core 1.8 GHz Tiger Lake 8 MB Smart Cache
RAM	8/16 GB RAM DDR4 3200 MHz memory bus speed
BIOS	AMI Aptio, compliance UEFI 2.7.0; core version 5.0.1.9
Real-time clock	Real-time clock with a power reserve of up to 5 years
CFast	128 GB oder 256 GB CFast memory card

Weight (without accessories, antenna, battery pack), material

DLT-V7310 P / R / D	Approx. 4,0 kg
DLT-V7312 P / R / D	Approx. 4,8 kg
DLT-V7312 P+	Approx. 4,6 kg
Battery pack	Approx. 0.15 kg
Material	Rugged aluminum-cast housing, ESD safe

Display

DLT-V7310	10.4" XGA color TFT 1024 x 768 resolution 500 cd/m² brightness
DLT-V7312	12.1" XGA color TFT 1024 x 768 resolution 600 cd/m² brightness
DLT-V7312 P+	12.1" XGA color TFT 1024 x 768 resolution 600 cd/m² brightness

The LC-Display of the DLT-V73 series fulfills the highest quality standards and was inspected for pixel defects. However, due to technological reasons pixel defects can occur. This is not a malfunction; it is a part of the technical specifications.

NOTICE ***Prevent system malfunction and property damage***

The display of the DLT-V73 has to be protected from the burning in of a motionless image. An image that has remained motionless for too long can cause irreversible damage to the display.

Recommendation:

1. *Use a screensaver.*
2. *In the power management, set the display to turn off when there is no user input.*

Resistive touchscreen

Type	5-wire analog resistive touchscreen
Construction	Optical bonding
Surface	Pencil Hardness: ≥3H at 750 g / 45°, meets the ASTM D3363 Chemically hardened glass DLT-V7310 R/D, V7312 R/D
Resistance	Impact protection rate IK08
Mechanical resistance	Tapping: > 10 million times with rubber test pen
Cleaning	Use neutral detergent or methyl alcohol (CH3OH) on a clean soft cloth to clean the panel surface. Prevent using any kind of chemical solvent, acidic or alkali solution. Foreign objects and imprints that can be wiped off are not regulated under the specifications and can be ignored.

Projected-capacitive touchscreen (PCAP)

Type	Projected-capacitive touchscreen
Construction	Optical bonding
Surface	Pencil Hardness: ≦7H at 750g / 45°, meets the ASTM D3363 Chemical AR coated glass: DLT-V7310 P, DLT-V7312 P, DLT-V7312 P+: gloss value 85 ± 10 (According to ISO 2813, 7668; ASTM D 523, D 2457; DIN 67539)
Resistance	Impact protection rate IK07
Mechanical properties	Thermally pre-stressed, acid-frosted float glass
Cleaning	Use neutral detergent or methyl alcohol (CH3OH) on a clean soft cloth to clean the panel surface. Prevent using any kind of chemical solvent, acidic or alkali solution. Foreign objects and imprints that can be wiped off are not regulated under the specifications and can be ignored.

5.2. Environmental conditions

DLT-V73 without integrated UPS	
Operating temperature	-30 to +50 °C / -22 to 122 °F Specification according to EN 60068-2-1/2
Storage temperature	-30 to +60 °C / -22 to 140 °F Specification according to EN 60068-2-1/2
Relative humidity	10% to 90% at 40 °C / 104 °F relative humidity, Noncondensing Specification according to IEC 60068-2-3
Mechanical vibration and shock resistance	Class 5M3 according to EN 60721-3-5 US Highway Truck according to MIL-STD 810F
IP protection class	IP66 for: DLT-V7310 DLT-V7312 DLT-V7312 P+

DLT-V73 with integrated UPS (optional)	
Operating temperature	-30 to +50 °C / -22 to 122 °F for DLT V73 system -10 to +30 °C / 14 to 86 °F for UPS functionality Specification according to EN 60068-2-1/2
Storage temperature	-20 to +50 °C / -4 to 122 °F Specification according to EN 60068-2-1/2
Discharging temperature	-10 to +30 °C / 14 to 86 °F (ambient temperature)
Charging temperature	-10 to +30 °C / 14 to 86 °F device is powered on 0 to +30 °C / 32 to 86 °F device is powered off
Relative humidity	10% to 90% at 40 °C / 104 °F relative humidity, Noncondensing Specification according to IEC 60068-2-3
Mechanical vibration and shock resistance	Class 5M3 according to EN 60721-3-5 US Highway Truck according to MIL-STD 810F
IP protection class	IP66 for: DLT-V7310 DLT-V7312 DLT-V7312 P+

NOTE

If the CPU temperature rises to 85 °C, the CPU is throttled to avoid overheating.

The Device can be operated without any safety issues from -30 to +50°C.

UPS functionality can only be guaranteed in specified temperature range.

If UPS is operated outside the temperature specifications, data loss by hard shutdown is possible.

If ambient temperature is higher than 30 °C, the Windows Energy Management settings are not reliable any more.

No safe shut down can be guaranteed when UPS is extending the bridging time of 20 min.

5.3. Device dimensions

5.3.1. DLT-V7310 P, R, D

Dimensions without add-ons (in mm)

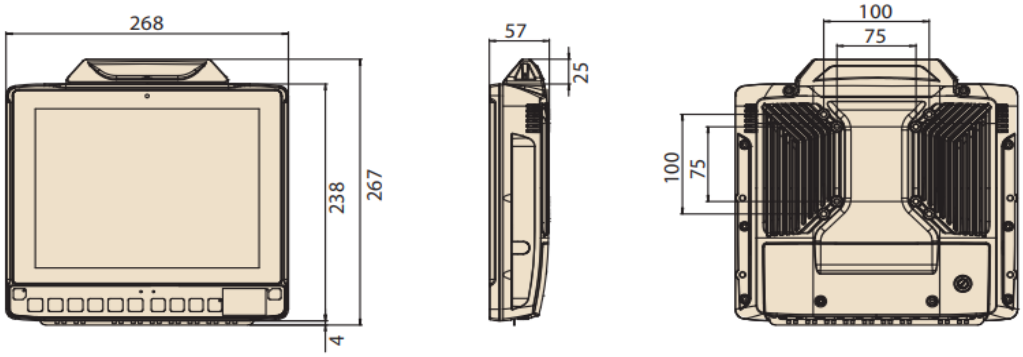


Fig. 5-1: Dimensions DLT-V7310 P, R, D (in mm)

5.3.2. DLT-V7312 P, R, D

Dimensions without add-ons (in mm)

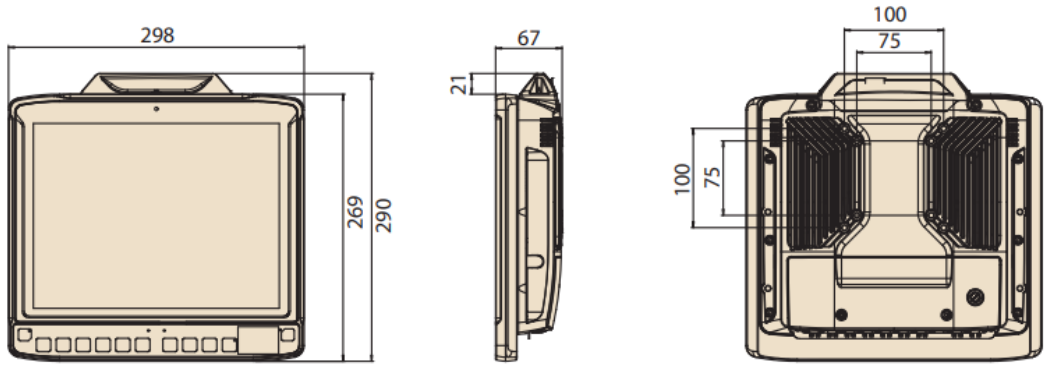


Fig. 5-2: Dimensions DLT-V7312 P, R, D (in mm)

5.3.3. DLT-V7312 P+

Dimensions without add-ons (in mm)

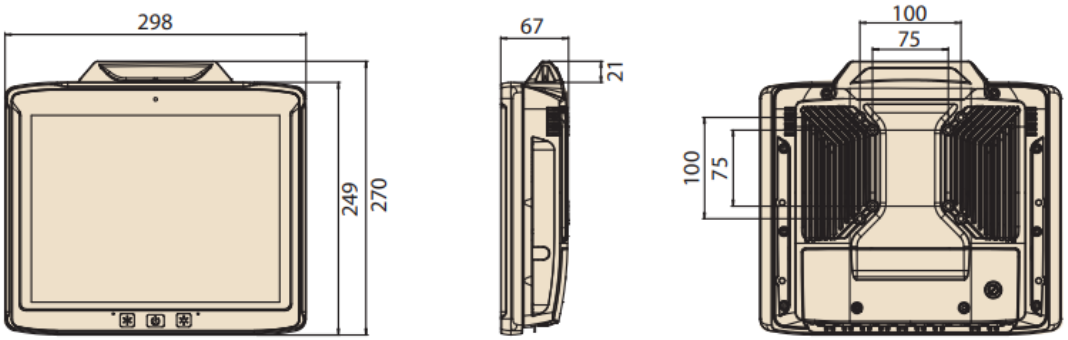


Fig. 5-3: Dimensions DLT-V7312 P+ (in mm)

5.3.4. VESA drill holes

The back of the DLT-V73 has VESA-compatible mounting hole pattern with 75 x 75 mm and 100 x 100 mm. It is used to attach VESA-compatible mountings to mount the DLT-V73 at the deployment location.

Depth of thread: M6 x 6mm for 75 x 75 mm

Depth of thread: M6 x 8 mm for 100 x 100 mm

Please observe the mounting information in manual chapter:

13.2.4 VESA mounting hole pattern

5.4. Integrated power supply, power supply cable (optional)

DLT-V73 is equipped with a galvanically separated, integrated DC power supply unit.

Power is connected to the back of the unit using a Phoenix Contact plug. There is no power switch. The power supply cable is available optional.

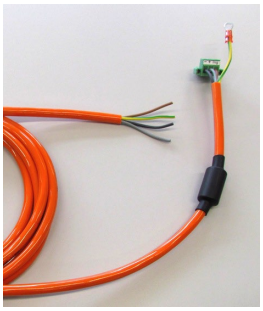


Fig. 5-4: DC Power supply cable with Phoenix Combicon, 3-pin

Power supply	
DC power pack 12/24/48 VDC (wide-range power supply unit) 60 W / 80 W internal	12/24/48 VDC nominal Galvanically isolated Withstands bursts up to 2 kV Full output power of the 12/24/48 VDC power supply unit for 20 seconds each: For 9 V: 60 W
Voltage range	9 to 60 VDC
Bridged power failures	Typically 2 ms at 12 V Typically 10 ms at 24 V Typically 40 ms at 48 V
Maximum output power	60 W (+10 to +70 °C internal device temperature); or 80 W (-30 to +10 °C internal device temperature)
Maximum input power	71 W (+10 to +70 °C internal device temperature) or 95 W (-30 to +10 °C internal device temperature)
Nominal current	8.4 A
Maximum current	11,2 A

Connection to SELV circuit only. The SELV circuit is a secondary circuit that is designed and protected so that its voltages will not exceed a safe value both when operating correctly or if a single error occurs.

Power consumption

DLT-V7310 / DLT-V7312 / DLT-V7312P+ PCAP / Resistive	
Celeron®	Typically 25 W; Standby typically 1 W
Core™ i5	Typically 30 W, Standby typically 1 W
DLT-V7310 / DLT-V7312 Defroster	Defroster function is on
Celeron®	Typically 55 W; Standby typically 1 W
Core™ i5	Typically 60 W, Standby typically 1 W

Power supply unit fuses

The fuse of the power supply unit is located inside the device and is not accessible from outside. The power supply is equipped with a 16 AT fuse.

In case of problems please contact our helpdesk.

5.4.1. DC voltage supply connection

Version: Phoenix Combicon, 3-pin.

External view:

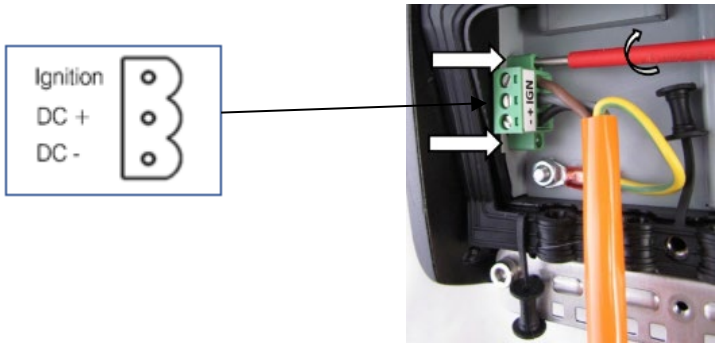


Fig. 5-5: DC power supply connector with connector detail view

Explanation:

“Ignition on” means that a control signal can be routed to this connection (e.g., ignition of a vehicle), that matches the supply voltage level and is able to supply at least 1 W to the DLT-V73.

The signal reference is DC-.

5.4.2. DC Power supply cable

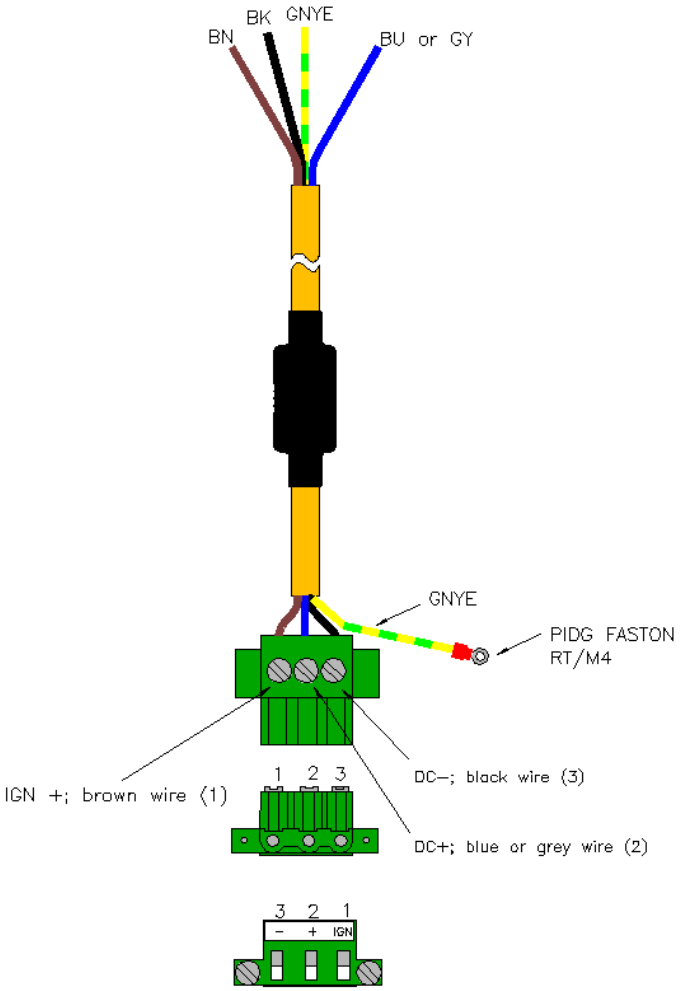


Fig. 5-6: DC connection cable assignment

6. Technical Data – Radio

6.1. Identification of radio equipment variants

The DLT-V73 offers numerous radio modules for WLAN, WWAN, GNSS and Bluetooth. This radio modules are available as options and are not included in the standard scope of delivery of the DLT-V73 device.

To identify the modules installed in your device, proceed as follows:

1. Read off the FCCID on the device name plate/label and compare with the technical data on the following pages.
2. Or open the **Device Manager** to determine the name of the radio card, for example.

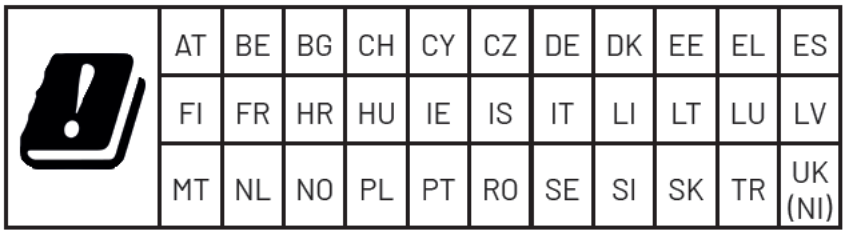
NOTICE ***Prevent system malfunction and property damage***

DLT-V73 may only be operated with the radio modules described in the following section.

Radio cards are located inside the devices and are not accessible from the outside. Only the manufacturer and its authorized service centers may open the device and install / remove it.

Restrictions of use

This product may be used in the following European member states subject to the following restrictions. For products that operate in the frequency band 5.150 to 5.350 GHz, wireless access systems (WAS), including radio local area networks (RLANs), shall be restricted to indoor use.



Wireless modulation

BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM/DBPSK/DQPSK/CCKGFSKπ/4-DQPSK,8DPSK

Frequency Table

	Band	Frequency	Max. Power
BT	BR	2400-2483.5MHz	8.3 ± 2dbm
BLE	Bluetooth® Low Eng.(LR125k)	2400-2483.5MHz	6.5 ± 1.5dbm
GNSS	GPS/Galileo/QZSS	1575.42±1.023MHz	-
GNSS	GLONASS	1597.5 - 1605.8MHz	-
GNSS	BeiDou/Compass	1561.098±2.046MHz	-
LTE	LTE-FDD B1	1920 – 1980MHz	23±2dBm
LTE	LTE-FDD B3	1710 – 1785MHz	23±2dBm
LTE	LTE-FDD B5	824 – 849MHz	23±2dBm
LTE	LTE-FDD B7	2500 – 2570MHz	23±2dBm
LTE	LTE-FDD B8	880 – 915MHz	23±2dBm
LTE	LTE-FDD B20	832 – 862MHz	23±2dBm
LTE	LTE-FDD B28	703 – 748MHz	23±2dBm
LTE	LTE-FDD B32	1452 – 1496MHz	23±2dBm
LTE	LTE-TDD B38	2570 – 2620MHz	23±2dBm
LTE	LTE-TDD B40	2300 – 2400MHz	23±2dBm
LTE	LTE-TDD B41	2496 – 2690MHz	23±2dBm
WCDMA	WCDMA B1	1920 - 1980MHz	23+1/-3dBm
WCDMA	WCDMA B3	1710 - 1785MHz	23+1/-3dBm
WCDMA	WCDMA B5	824 - 849MHz	24+1/-3dBm
WCDMA	WCDMA B8	880 - 915MHz	24+1/-3dBm
WiFi 2.4	2.4G WiFi 802.11b	2412-2472MHz | 20MHz(LB)	15 ± 1.0dbm
WiFi 2.4	2.4G WiFi 802.11g/n	2412-2472MHz | 20MHz(LB)	17 ± 1.0dbm
WiFi 2.4	2.4G WiFi 802.11ax	2412-2472MHz | 20MHz(LB)	17 ± 1.0dbm
NFC	NFC	13.56MHz	-35.93dBuA/m
WiFi 5	5G WiFi 802.11a	5180-5500 | 20MHz(HB)	17± 1.0dbm
WiFi 5	5G WiFi 802.11n	5180-5580 | 20MHz(HB)	18± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5200-5500 | 20MHz(HB)	17± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5180-5320 | 20MHz(HB)	17± 1.0dbm
WiFi 5	5G WiFi 802.11n	5190-5510 | 40MHz(HB)	19± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5230-5510 | 40MHz(HB)	19± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5190-5510 | 40MHz(HB)	18± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5210-5530 | 80MHz(HB)	18± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5210-5690 | 80MHz(HB)	18± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5250-5570 | 160MHz(HB)	19± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5250-5570 | 160MHz(HB)	19± 1.0dbm
WiFi 5	5G WiFi 802.11a	5745-5825 | 20MHz(HB)	7± 1.0dbm
WiFi 5	5G WiFi 802.11n	5755-5795 | 20MHz(HB)	8± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5745-5825 | 20MHz(HB)	8± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5745-5825 | 20MHz(HB)	8± 1.0dbm
WiFi 5	5G WiFi 802.11n	5755-5795 | 40MHz(HB)	9± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5755-5795 | 40MHz(HB)	9± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5755-5795 | 40MHz(HB)	9± 1.0dbm
WiFi 5	5G WiFi 802.11ac	5775 | 160MHz(HB)	9± 1.0dbm
WiFi 5	5G WiFi 802.11ax	5775 | 160MHz(HB)	9± 1.0dbm
WiFi 6/6E	6G WiFi 802.11ax	5955-6675| 20MHz(UHB)	19dbm ±1dBm
WiFi 6/6E	6G WiFi 802.11ax	5965-6685 | 40MHz(UHB)	18dbm ±1dBm
WiFi 6/6E	6G WiFi 802.11ax	5985-6705 | 80MHz(UHB)	19dbm ±1dBm
WiFi 6/6E	6G WiFi 802.11ax	6025-6665| 160MHz(UHB)	16dbm ±1dBm

6.2. WLAN Radio cards (optional)

6.2.1. Radio card for WLAN: Intel 6E (AX210.NGWG.II)

Intel 6E AX210.NGWG.II	
Card type	WLAN PCIe Half-Mini Card
Technology	WLAN IEEE802.11 a/b/g/n/ac/ax Bluetooth 5.3 (both supported via a single antenna)
FCCID	PD9AX210NG
IC ID	1000M-AX210NG
Supported standards	WLAN IEEE802.11 a/b/d/e/g/h/i/k/n/r/u/v/w/ac/ax
Band 1: WLAN 2.4 GHz	
Frequency range	2400 to 2485 MHz
Frequency band ETSI Europe	2.4 GHz to 2.483 GHz
Channels available	1 to 13
Supported standards	Bluetooth (both supported via a single antenna)
Maximum TX power	100 mW / 20 dBm
Band 2: WLAN 5 GHz	
Frequency range	5150 to 5875 MHz
Frequency band ETSI Europe	5.15 GHz to 5.35 GHz 5.47 GHz to 5.725 GHz
Channels available	36 to 165
Maximum TX power	200 mW / 23 dBm

6.2.2. Radio card for WLAN: Qualcomm WMX7205-0

Qualcomm WMX7205-0	
Card type	WLAN PCIe Half-Mini Card
Technology	WLAN IEEE802.11 a/b/g/n/ac/ax Bluetooth 5.3 (both supported via a single antenna)
FCC ID	2A3G3-WMX720X
CE RED ID	E1177-221911
IC ID	CS34784
Supported standards	WLAN IEEE802.11 a/b/d/e/g/h/i/k/n/r/u/v/w/ac/ax
Band 1: WLAN 2.4 GHz	
Frequency range	2400 to 2485 MHz
Frequency band ETSI Europe	2.4 GHz to 2.483 GHz
Channels available	1 to 13
Supported standards	Bluetooth (both supported via a single antenna)
Maximum TX power	100 mW / 20 dBm
Band 2: WLAN 5 GHz	
Frequency range	5150 to 5875 MHz
Frequency band ETSI Europe	5.15 GHz to 5.35 GHz 5.47 GHz to 5.725 GHz
Channels available	36 to 165
Maximum TX power	200 mW / 23 dBm

6.3. WWAN Radio cards (optional)

6.3.1. Radio card for WWAN: QUECTEL EM06-A/E

USA: Quectel -EM06-A
Europe / Korea: Quectel EM06-E

Card type	WWAN PCIe Full-Mini Card
Technology	WWAN 3G, 4G cellular bands, broadband IoT/M2M LTE Cat 6 (EM06) and GNSS
FCC ID	XMR201906EM06A (China excluded)
Maximum transmitting power	Class 3 (23dBm±2dB) for LTE FDD Class 3 (23dBm±2dB) for LTE TDD Class 3 (24dBm+1/-3dB) for WCDMA
Carrier	EM06-A: North America: Verizon/AT&T/Sprint/T-Mobile EM06-E: Europe: Deutsche Telekom Australia: Telstra
GPS	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)

6.3.2. Radio card for WWAN: QUECTEL EM05-G (Global)

Global: Quectel EM05-G

Card type	WWAN PCIe Full-Mini Card
Technology	WWAN 3G, 4G cellular bands, broadband IoT/M2M LTE Cat 4 (EM05) and GNSS
FCC ID	XMR2021EM05G
CE RED ID	E1177-221968
IC ID	10224A-2021EM05G
UKCA ID	U1177-221659
Maximum transmitting power	Class 3 (23dBm±2dB) for LTE FDD Class 3 (23dBm±2dB) for LTE TDD Class 3 (24dBm+1/-3dB) for WCDMA
Carrier	Europe: Vodafone/Swisscom/EE America: Verizon/AT&T/T-Mobile China: China Telecom/China Mobile/China Unicom Japan: NTT DOCOMO/Softbank/KDDI
GPS	GPS, GLONASS, BDS, Galileo, QZSS

6.4. Antennas (optional)

Antenna types and RSSI for Taiwan Anjie Electronics antenna:

Antenna	Gain	Type
WLAN internal MPA.29.A	2.4G < 3.22 dBi 5G < 5.54 dBi 6G < 5.81 dBi	PIF-Antenna (Planar Inverted F-Shaped Antenna)
WLAN external 1399.17.0040	< 4.0 dBi	Permanent Mount External Antenna
WWAN external TLS.01.305111	< 5.3 dBi	Permanent Mount External Antenna
GPS external 1750001782	30 +- 4,5 dBi	Permanent Mount External Antenna

Antenna types and RSSI for Taoglas antenna:

Antenna	Gain	Type
WLAN internal MPA.29.A	2.4G < 3.22 dBi 5G < 5.54 dBi 6G < 5.81 dBi	MIMO Antenna (Multiple Input Multiple Output antenna)
WLAN external 1399.17.0040	< 4.0 dBi	Permanent Mount External Antenna
WWAN external TLS.01.305111	< 5.3 dBi	Permanent Mount External Antenna
GPS external 1750001782	30 +- 4,5 dBi	Permanent Mount External Antenna

6.4.1. WLAN antennas

Fig. 6-1: WLAN antenna

Technical data for Taiwan Anjie Electronics antenna

Application	WLAN a/b/g/n/ac/ax Dual Band with MRC Bluetooth (integrated via Radio card)
WLAN frequency range	Band 1: 2400 to 2480 MHz Band 2: 4900 to 5850 MHz Band 3: 5925 to 7125 MHz
Bluetooth features	See section *6.4.5 Bluetooth integrated (optional)*
Number of antennas	2
Available color	Blue
Type	Omnidirectional antenna
Antenna gain	Max. 5.81 dBi (without loss through the cable)
Impedance	50 Ω
Polarization	Vertical/horizontal
Maximum transmitting power	100 mW / 20 dBm
Compatible Radio cards:	(see section *6.2 WLAN Radio cards (optional)*

Technical data for Taoglas antenna

Application	WLAN a/b/g/n/ac/ax Dual Band with MRC Bluetooth (integrated via Radio card)
WLAN frequency range	Band 1: 2400 to 2480 MHz Band 2: 4900 to 5850 MHz Band 3: 5925 to 7125 MHz
Bluetooth features	See section *6.4.5 Bluetooth integrated (optional)*
Number of antennas	2
Available color	Blue
Type	Omnidirectional antenna
Antenna gain	Max. 5.81 dBi (without loss through the cable)
Impedance	50 Ω
Polarization	Linear
Maximum transmitting power	100 mW / 20 dBm
Compatible Radio cards:	(see section *6.2 WLAN Radio cards (optional)*

6.4.2. External WLAN antenna IEEE 802.11 a/b/g/n

Fig. 6-2: External WLAN antenna

Technical data

Application	WLAN IEEE 802.11 a/b/g/n Dual Band
Mounting location	For detached mounting, e.g. on the roof of the forklift
WLAN frequency range	Band 1: 2400 to 2485 MHz Band 2: 5150 to 5875 MHz
Number of antennas	1
Type	Omnidirectional antenna
Antenna gain	Band 1: Max. 4 dBi (without loss through the cable) Band 2: Max. 6.5 dBi (without loss through the cable)
Impedance	50 Ω
Polarization	Vertical/horizontal
Dimensions	Ø 86 x 43 mm (Ø 3.39” x 1.69”)
Weight	0.3 kg (0.66 lbs)
Connector labeling	N-type or TNC N, Jack, female, bottom RSMA plug for RSMA socket on the terminal
Scope of delivery	3 m antenna cable
Maximum transmitting power	100 mW / 20 dBm
Compatible WLAN cards	(see section *6.2 WLAN Radio cards (optional)*

6.4.3. External WWAN antenna 2G, 3G, 4G

Fig. 6-3: External 2G, 3G, 4G WWAN antenna

Technical data

Application	WWAN 2G, 3G, 4G cellular bands
Mounting location	For detached mounting, e.g. on the roof of the forklift
Number of antennas	1
Type	Omnidirectional antenna
Antenna gain	Typically 2.2 dBi
Impedance	50 Ω
Polarization	Vertical
Dimensions	Height 79.45 mm Diameter 42 mm
Cable length	3 m
IP protection	IP67 and IP69K
Compatible WWAN cards:	(see section *6.3 WWAN Radio cards (optional)*)

6.4.4. External GPS antenna

Fig. 6-4: External GPS antenna

Technical Data

Mounting location	For detached mounting, e.g. on the roof of the forklift
WLAN frequency range	Band 1: 1575.42 to 1023 MHz
Number of antennas	1
Type	GPS antenna
Antenna gain	Band 1: Max. 4,5 dBi
Impedance	50 Ω
Polarization	Right-handed circular polarization (RHCP)
Dimensions	Ø 38 x 40,5 mm
Weight	105 g
Connector labeling	N-Type or TNC N, Jack, female, bottom SMA (M) plug for SMA socket on terminal
Scope of delivery	5 m antenna cable
Compatible WLAN cards:	(see section *6.3 WWAN Radio cards (optional)*

6.4.5. Bluetooth integrated (optional)

Requirement: Use of the radio card **Intel 6E AX210.NGWG.II**

- Bluetooth Type 5.3
- Standards: up to V5.3
- Transmission rate: up to 3 Mbps

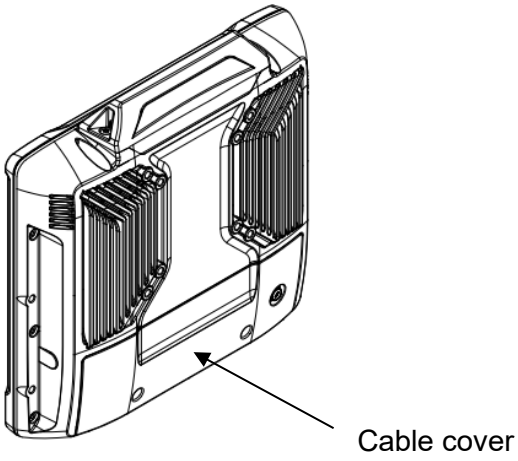
NOTE

For full Bluetooth 5.3 SW support you need Windows Win10IoTEnt or Win11IoTEnt.

For more information on downloading the last available Standard Intel driver see chapter 10.6.2 Driver download.

7. Connectors

7.1. Connectors under the cable cover



Connectors located on the connector panel under the cable cover:

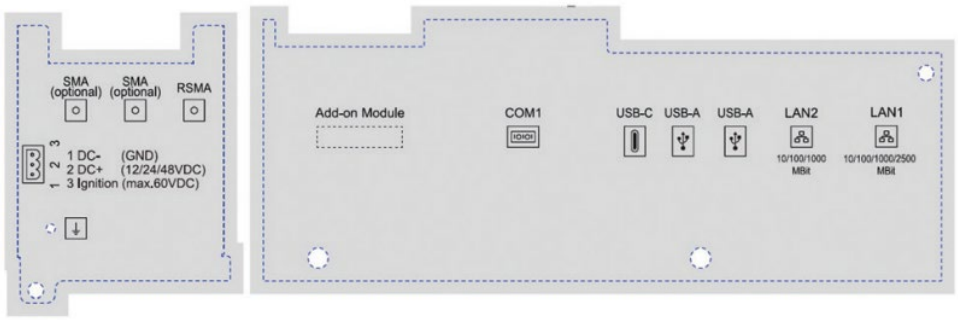


Fig. 7-1: Connectors on the connector panel under the cable cover

Connector assignment (from right to left)

2 x RJ45	LAN1 Ethernet 10/100/1000/2500 MBit/s LAN2 Ethernet 10/100/1000 MBit/s
2 x USB Type A 1 x USB Type-C	USB 3.2 interface (Gen1) bootable USB 3.2 interface (Gen2) bootable Fused at 1.0 A per channel ESD Level 4 protected (according to EN 61000-4-2)
1 x COM	RS-232, 5VDC / 12VDC / RI (switchable; USB to serial) Serial interfaces RS232 Baud rates: 300 bps to 1 Mbps
1 x AddOn Modul (optional, but ONE at a time)	LAN Ethernet 10/100/1000 MBit/s USB-A 3.2 (Gen1) COM2 as RS-232 (USB to serial) COM2 as RS-485 / 422 Full Duplex (USB to serial) COM2 as RS-485 Half Duplex (USB to serial) CAN BUS Digital I/O (see chapter *7.1.1 AddOn Module)*
1 x RSMA	External WLAN antenna
2 x SMA (optional)	External WWAN antenna External GPS antenna
Power supply	12/24/48 VDC nominal

Network adapter (10/100/1000/2500)

The DLT-V73 is equipped with two network adapters with 10/100/1000/(2500) Mbit per second. This adapter can be accessed via the bottom of the device and offers an RJ45 connection jack.

The RJ45 connection port has two integrated status LEDs and are assigned as follows:

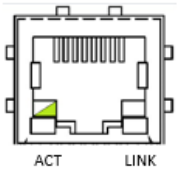
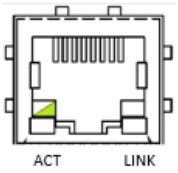
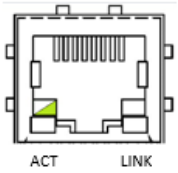
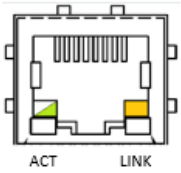
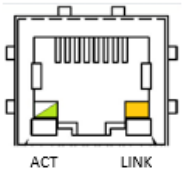
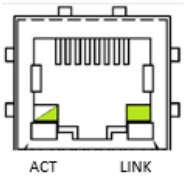
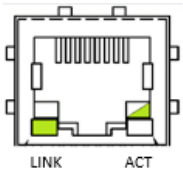
LAN1 (Intel® Ethernet-Controller I225-IT)		LAN2 (Intel® Ethernet-Controller I210-IT)	
Speed	**LED-Behavior**	**Speed**	**LED-Behavior**
10 Mbit/s		10 Mbit/s	
100 Mbit/s		100 Mbit/s	
1 Gbit/s		1 Gbit/s	
2,5 Gbit/s		-	

Fig. 7-2: RJ45 network ports

Problems with data transmission via LAN/Ethernet

If problems occur during data transmission over LAN/Ethernet (e.g., data is lost or not detected), the cause of these problems may be a cable which is too long. Depending on the cable layout and interference from the environment, it may be impossible to use the cable length of 100 m given in the specification (IEEE 802.3 standard). The solution here is the use of a shorter cable.

COM1 as a voltage source

The COM1 interface can optionally supply to externally connected equipment with +5/12 VDC. The voltages are protected by internal fuses and may not exceed a continuous consumed current of 1 A at 5/12 V.

Depending on the connected devices the maximum current consumption may be significantly lower.

With using “MDevice” you can select whether “+5/12 VDC” or “RI” is output on pin 9 of COM1.

Pin assignment (suggested DB9 connector pinout):

DB9 Pin	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI

Fig. 7-3: Pin assignment COM1 - RS-232

Pin assignment description SMA / RSMA – external antennas

#1	WLAN antenna	WLAN external antenna incl. 3 m cable
#2	WWAN antenna	WWAN external Antenna incl. 3 m cable
#3	GPS antenna	GPS external antenna incl. 3 m cable

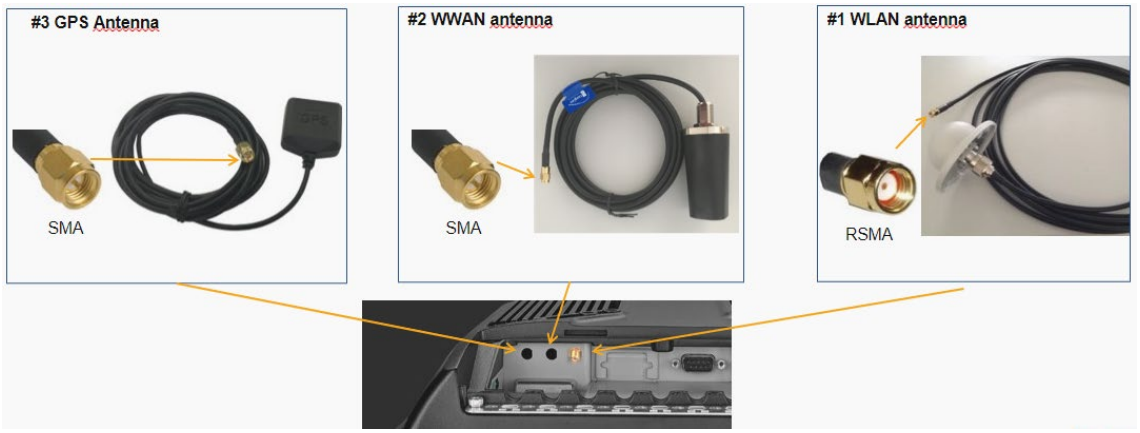


Fig. 7-4: Pin assignment description external antennas

7.1.1. AddOn Module

7.1.1.1. Network-Adapter, Ethernet (10/100/1000)

The DLT-V73 is equipped with an optional network adapter with 10/100/1000 Mbit per second. This adapter is accessible via the underside of the device and features a RJ45 socket.

The RJ45 connection port has two integrated status LEDs and are assigned as follows:

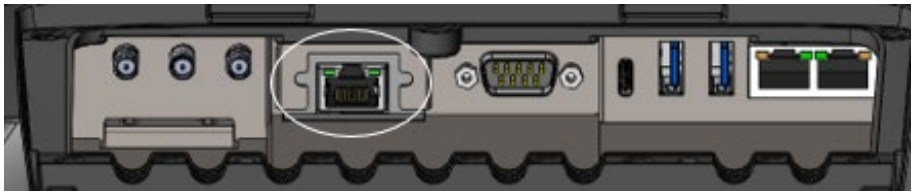


Fig. 7-5: LAN interface

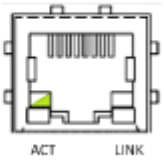
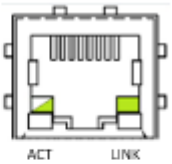
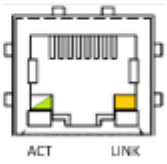
LAN3 (Realtek RTL8153BI-CG)	
Speed	**LED-Behavior**
10 Mbit/s	
100 Mbit/s	
1 Gbit/s	

Fig. 7-6: AddOn RJ45 network ports

7.1.1.2. USB-A 3.2 Gen1

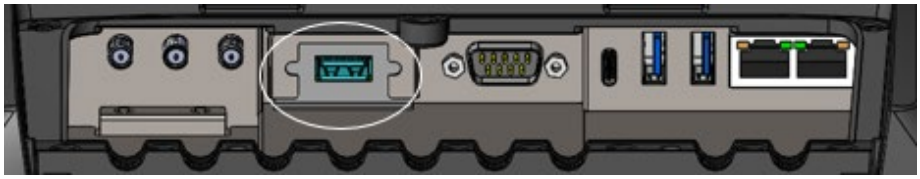


Fig. 7-7: AddOn USB-A 3.2 Gen1 interface

NOTE *The USB-A 3.2 Gen1 connection is mounted horizontal in the AddOn Module.*

7.1.1.3. COM2 interfaces

COM2 as RS-232 (optional)

An RS-232 interface can be integrated into the DLT-V73 as an optional serial interface.

The RS-232 mode (3Tx/5Rx) provides full support for all eight signals commonly used with the DB9 RS-232 connector.

All transmitter outputs and receiver inputs have robust ESD (electrostatic discharge) protection up to +-15 kV IEC-61000-4-2 air gap, +-8 kV IEC-61000-4-2 contact and +-15 kV Human Body Model (HBM).

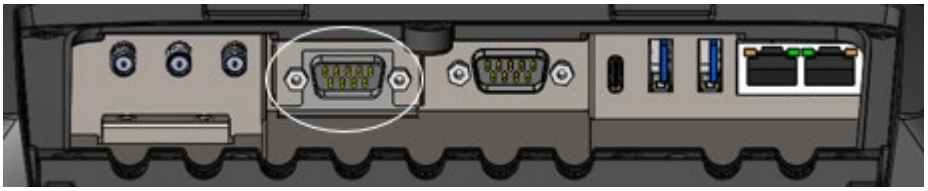


Fig. 7-8: AddOn COM2 interface

Pin assignment (suggested DB9 connector pinout):

DB9 Pin	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI

Fig. 7-9: AddOn Pin assignment COM2

COM2 as RS-485 / 422 Full Duplex (optional)

An RS-485/422 interface can be integrated into the DLT-V73 as an optional serial interface.

The RS-485/RS-422 modes have one driver and one receiver (1Tx/1Rx) in both half and full duplex configurations.

All transmitter outputs and receiver inputs have robust ESD (electrostatic discharge) protection up to +-15 kV IEC-61000-4-2 air gap, +-8 kV IEC-61000-4-2 contact and +-15 kV Human Body Model (HBM).

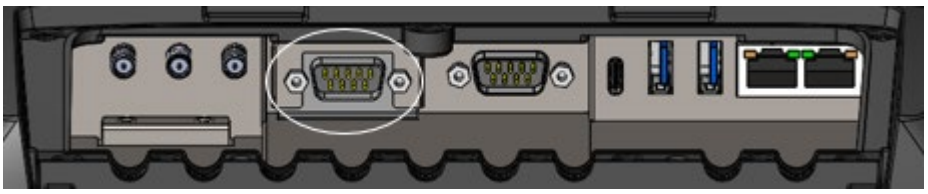


Fig. 7-10: AddOn COM2 interface

Pin assignment (suggested DB9 connector pinout):

DB9 Pin	RS-485 / RS-422 Full Duplex
1	TX-
2	TX+
3	RX+
4	RX-
5	Ground
6	
7	
8	
9	

Fig. 7-11: AddOn Pin assignment COM2

NOTE *Termination default settings for RS-485/422 Full Duplex is **Off.***

COM2 as RS-485 Half Duplex (optional)

An RS-485 interface can be integrated into the DLT-V73 as an optional serial interface.

The RS-485 mode has one driver and one receiver (1Tx/1Rx) in both half and full duplex configurations.

All transmitter outputs and receiver inputs have robust ESD (electrostatic discharge) protection up to +-15 kV IEC-61000-4-2 air gap, +-8 kV IEC-61000-4-2 contact and +-15 kV Human Body Model (HBM).

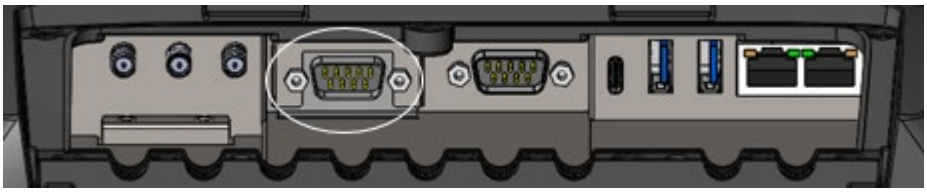


Fig. 7-12: AddOn COM2 interface

Pin assignment (suggested DB9 connector pinout):

DB9 Pin	RS-485 Half Duplex
1	Data-
2	Data+
3	
4	
5	Ground
6	
7	
8	
9	

Fig. 7-13: AddOn Pin assignment COM2

NOTE *Termination default settings for RS-485 Half Duplex is **Off.***

Tips & tricks

Note that according to the RS-232-E specification, the maximum cable length is 15 m at 19,200 bps.

However, according to RS-422-A for use of a twisted pair line and correct termination 1200 m at up to 100 kbps is possible. For a data rate of 1 Mbps and a high-quality connection cable, approx. 400 m cable lengths are still possible. Frequent causes of malfunctions for RS-232-E connections are the formation of ground loops. If both end devices establish a ground connection via RS-232-E but do not share the same ground potential in their power supply circuits, then compensation currents may result; this is particularly noticeable with long cables.

These compensation currents, which are also present at the ground point of the RS-232-E connection, may significantly degrade signal quality and effectively stop the data flow. In challenging environments, electrically-isolated connections (via the RS-422/485 option) or external converter from RS-232-E according to RS-422/485 are strongly recommended.

7.1.1.4. CAN interface

A 120 Ω termination resistor is not integrated in the add-on module, so it may have to be added externally.

The API description and a test application can be found on the Advantech download page at www.advantech.com.

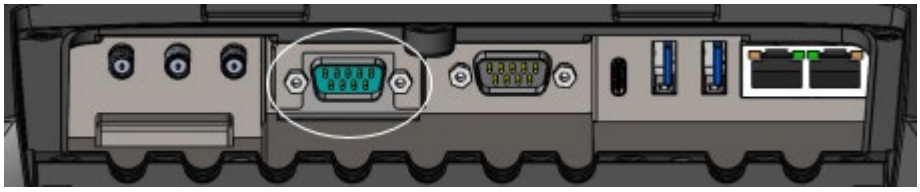


Fig. 7-14: AddOn CAN FD interface

Pin assignment of CAN interface:

Supported protocols:

CAN 2.0A (11-bit identifier)
CAN 2.0B (29-bit identifier)
CAN FD (Flexible Data-rate)

Bit Rates:

CAN 2.0: Up to 1 Mbps
CAN FD: Up to 8 Mbps

DB9Pin	Function
1	n.c.
2	CAN_L (CH1)
3	CAN_GND (CH1)
4	CAN_L (CH2)
5	CAN_GND (CH2)
6	n.c.
7	CAN_H (CH1)
8	n.c.
9	CAN_H (CH2)

Fig. 7-15: Pin assignment CAN interface

If both CAN channels are to be used, the following Y-cable (PN: 1700035114-01) may have to be used to adapt both CAN channels to the "standard" CAN DSUB 9 pinning.

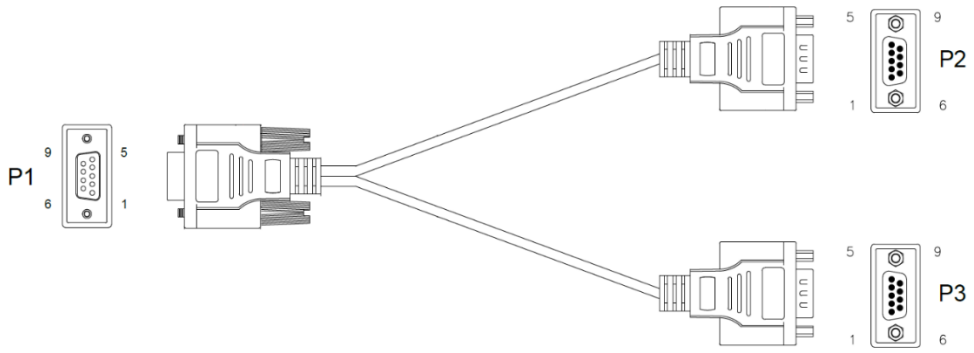


Fig. 7-16: Y-cable

7.1.1.5. Digital I/O-interface

The Digital I/O interface is galvanically separated from the overall system. A matching driver is integrated in the operating system. An API description as well as sample application are available upon request. Contact your Advantech sales representative if necessary.

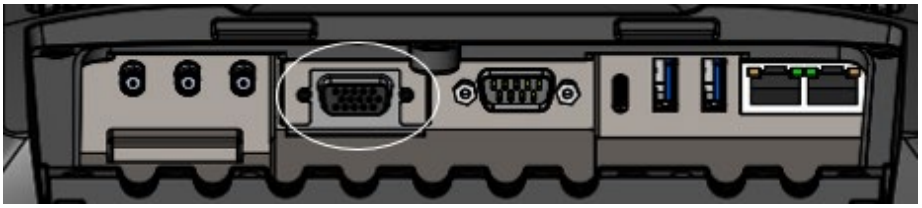


Fig. 7-17: AddOn Digital I/O interface

Pin assignment of Digital I/O interface:

3x DI (galvanically isolated)

3x DO (galvanically isolated / dry contact)

Pin1	DO2_RTN
Pin2	DI2
Pin3	DO0
Pin4	NC
Pin5	DO1_RTN
Pin6	DI0
Pin7	GND_DIO
Pin8	NC
Pin9	DO0_RTN
Pin10	NC
Pin11	DI1
Pin12	GND_DIO
PIn13	NC
Pin14	DO1
Pin15	DO2

Fig. 7-18: Pin Assignment Digital I/O interface

7.1.2. Opening the cable cover

1. Unscrew the thin headless screws of the cable cover with an Allen wrench, size 3.
2. Carefully remove the cable cover.

NOTICE ***Prevent system malfunction and property damage***

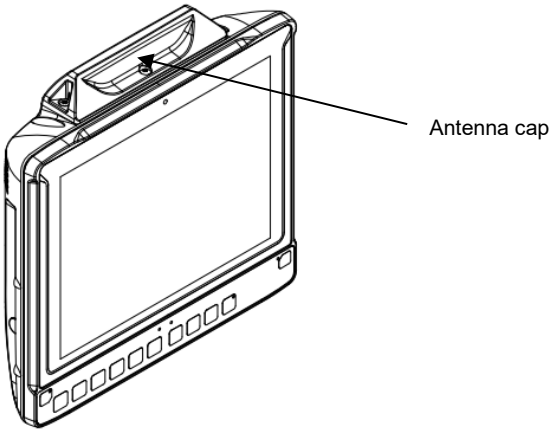
Improper opening of the cable cover can impair the function of the entire DLT-V73 system.

1. *The cable cover is only permitted to be removed by qualified expert personnel and only for the duration of servicing work.*
2. *Switch off the DLT-V73 before removing the cable cover.*
3. *The device has to be fully deenergized.*
4. *No objects or liquids are permitted to enter the opened DLT-V73.*
5. *The device is only permitted to be operated again once the cable cover is properly sealed again; only then is the protection class guaranteed.*

Closing the cable cover

Please refer to section *14.3.7 Attach the cable cover.*

7.2. Connectors under the antenna cap / WLAN Diversity antenna



Connectors located under the antenna cap / WLAN Diversity antenna

CFast–Card Slot	CFast-Card Slot
USB Type-C	USB3.2 Gen2 interface
SIM-Tray	Mini-SIM-Card Slot
Battery pocket	Secured under the antenna cap

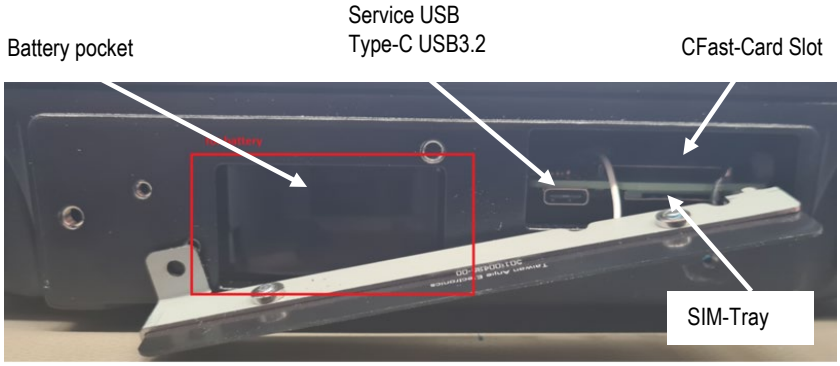


Fig. 7-19: Connectors located under the antenna cap
(with Taiwan Anjie Electronics antenna)

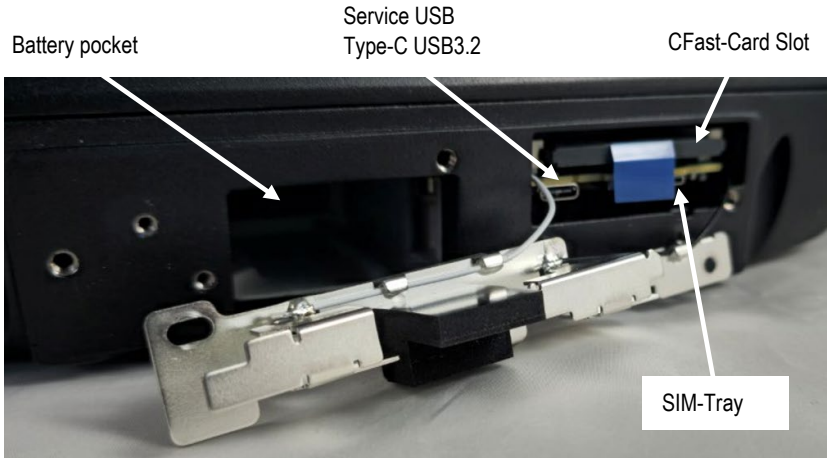


Fig. 7-20: Connectors located under the antenna cap
(with Taoglas antenna)

7.2.1. Open/close the WLAN antenna cap IEEE 802.11 a/b/g/n/ac/ax

E.g. for to have access to the USB Type-C service port the antenna cap has to be removed carefully. Adapter (Type-C to USB 3.0A) can be ordered optional.

Fig. 7-21: WLAN antenna IEEE 802.11 a/b/g/n/ac/ax

NOTICE ***Prevent system malfunction and property damage***

Improper opening of the antenna cap can impair the function of the entire DLT-V73 system and in particular the radio functionality.

1. *Antenna cap is only permitted to be removed by qualified expert personnel and only for the duration of servicing work.*
2. *Switch off the DLT-V73 before removing the antenna cap.*
3. *No objects or liquids are permitted to enter the opened DLT-V73.*
4. *Insert/remove cards and sticks when the device has been fully deenergized.*
5. *Hold cards and sticks securely and carefully, and insert precisely into the connections to avoid anything falling inside the device.*
6. *To remove the CFast card, carefully pull the card.*
7. *Use only CFast cards that have been approved for the product by Advantech.*
8. *The device is only permitted to be operated again once the antenna cap is properly sealed again; only then is the protection class guaranteed.*

Follow these steps to open antenna cap “WLAN antenna IEEE 802.11 a/b/g/n/ac/ax”:

Tools required:

- Torx screwdriver, Tx20

Opening the antenna cap:

Fig. 7-22: WLAN antenna cap IEEE 802.11 a/b/g/n/ac/ax

1. Unfasten the three screws on the antenna with a Torx screwdriver, Tx20.
2. Remove the antenna cap from the device.

Result:

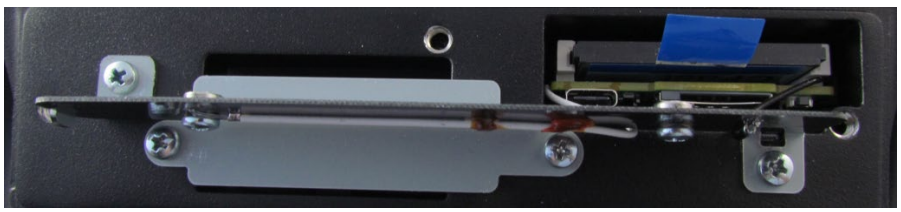


Fig. 7-23: WLAN antenna cap IEEE 802.11 a/b/g/n/ac/ax opened (with Taiwan Anjie Electronics antenna)

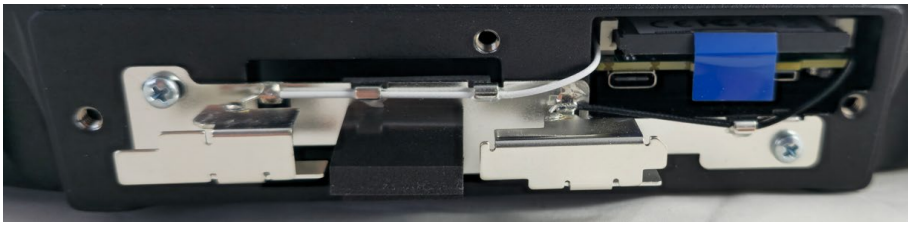


Fig. 7-24: WLAN antenna cap IEEE 802.11 a/b/g/n/ac/ax opened (with Taoglas antenna)

Optional USB Type-C to Type-A adapter can now be connected to the Service Port.

Fig. 7-25: Connected adapter to USB Type-C Service Port
(with Taiwan Anjie Electronics antenna)

Fig. 7-26: Connected adapter to USB Type-C Service Port
(with Taoglas antenna)

Closing the antenna cap:

1. Place the antenna cap back onto the DLT-V73.
2. Tighten all screws alternatingly (1,0 Nm torque).

8. Operating the DLT-V73

8.1. Safety notes

WARNING ***Personal injury, Property damage and downtimes due to improper operation***

Users of the DLT-V73 must be trained by skilled personnel and instructed in the operation of the device. All users must be familiar with all functions of the product they come into contact with.

General

1. *Observe section 2.7 Safety during ongoing work operations in the Safety Chapter of this manual.*
2. *Do not use the DLT-V73 in explosion hazard areas.*
3. *Switch off the DLT-V73 before using the interfaces underneath the antenna.*
4. *Switch off the DLT-V73 before replacing the battery pack.*
5. *Ensure that the deployment location of the DLT-V73 complies with the permissible environmental conditions.*

The following applies when using the DLT-V73 on vehicles:

Risk of accident! The vehicle driver is not permitted to operate the DLT-V73 while driving. Operating the device can represent a distraction from driving operations and there is an increased risk of accident.

Deployment location fueling stations, chemical plants:

1. *The operation of electrical equipment at locations where flammable gases or vapors are present poses a safety hazard.*
2. *Turn off the DLT-V73 when you are near gas stations, fuel depots, chemical plants or places where blasting operations take place.*

NOTICE ***Prevent system malfunction and property damage***

1. *While the vehicle battery is charging, disconnect the DLT-V73 from the vehicle battery.*
2. *Alternatively, ensure that the maximum permitted input voltage of the DLT-V73 is not exceeded.*

8.2. Switching the DLT-V73 on/off

The following factors determine how the DLT-V73 can be switched on and off:

- Is the DLT-V73 mounted on a vehicle and connected with the ignition signal?
- Automatic shutdown settings defined in respective configuration application, e.g., “MDevice”.

NOTE

Time between switching off and on: 10 seconds

After the DLT-V73 has been shut down and switched off, it takes 10 seconds until the device will react to a swith-on signal (POWER button, ignition).

The Manual “MDevice” is available on our websites.

Switch on – depending on the configuration:

1. Press the POWER button.
2. Or: Apply the supply voltage.
3. Or: Through the ignition signal of the vehicle (depends on the automatic shutdown settings).

Switch off – depending on the configuration:

1. Press the POWER button of the activated DLT-V73.
2. Or: Disconnect the supply voltage.
   NOTICE: Devices without integrated UPS will be hard-terminated (data loss possible).
   Devices with integrated UPS will switch automatically to UPS/battery power supply when the supply voltage is broken.
3. Or: Deactivate the ignition of the connected vehicle (depends on the automatic shutdown settings).

WARNING

Because of the battery pack, the integrated UPS may still carry current even if the DLT-V73 itself is switched off.

Reason: If the DLT-V73 has been configured to also start without POWER button and ignition in the MDevice, this setting will need to be changed first. Otherwise, the DLT-V73 will restart after a short pause as long as there is available battery capacity.

1. *Shut down the DLT-V73 via the operating system function.*
2. *Disconnect from the power supply.*
3. *Disassemble the antenna cap.*
4. *Remove WLAN Diversity antenna*
   Take care of the antenna cables. Do not pull, bend or squeeze the cables. Please also refer to chapter 15.1.3 Replacing the battery pack.
5. *Open the battery cover.*
6. *Disconnect the battery pack.*

8.3. Operating the touchscreen

All touchscreens (Resistive and PCAP) can be operated with:

- Clean, dry fingers
- Clean, dry gloves

Resistive touchscreens can be operated with:

- Suitable touch stylus plastic or wood, rounded tip

PCAP touchscreens can be operated with:

- Suitable touch stylus with capacitive (electrically conductive) tip

Prevent damage to all touchscreens Resistive and PCAP

1. Keep the touchscreen clean.
2. Do not touch the touchscreen with pointed, sharp, rough or hard objects, e.g., ball point pens, writing implements, tools of any kind (e.g. screwdrivers).
3. Make sure that no adhesives get on the surface of the touchscreen.
4. Ensure that the screen surface is not influenced by high voltages or static electricity.
5. Do not use excessive force when touching touchscreens, do not hit or press hard.
6. If the device with the touchscreen is placed down: Place a clean, soft cloth underneath.

NOTICE ***Prevent system malfunction and property damage***

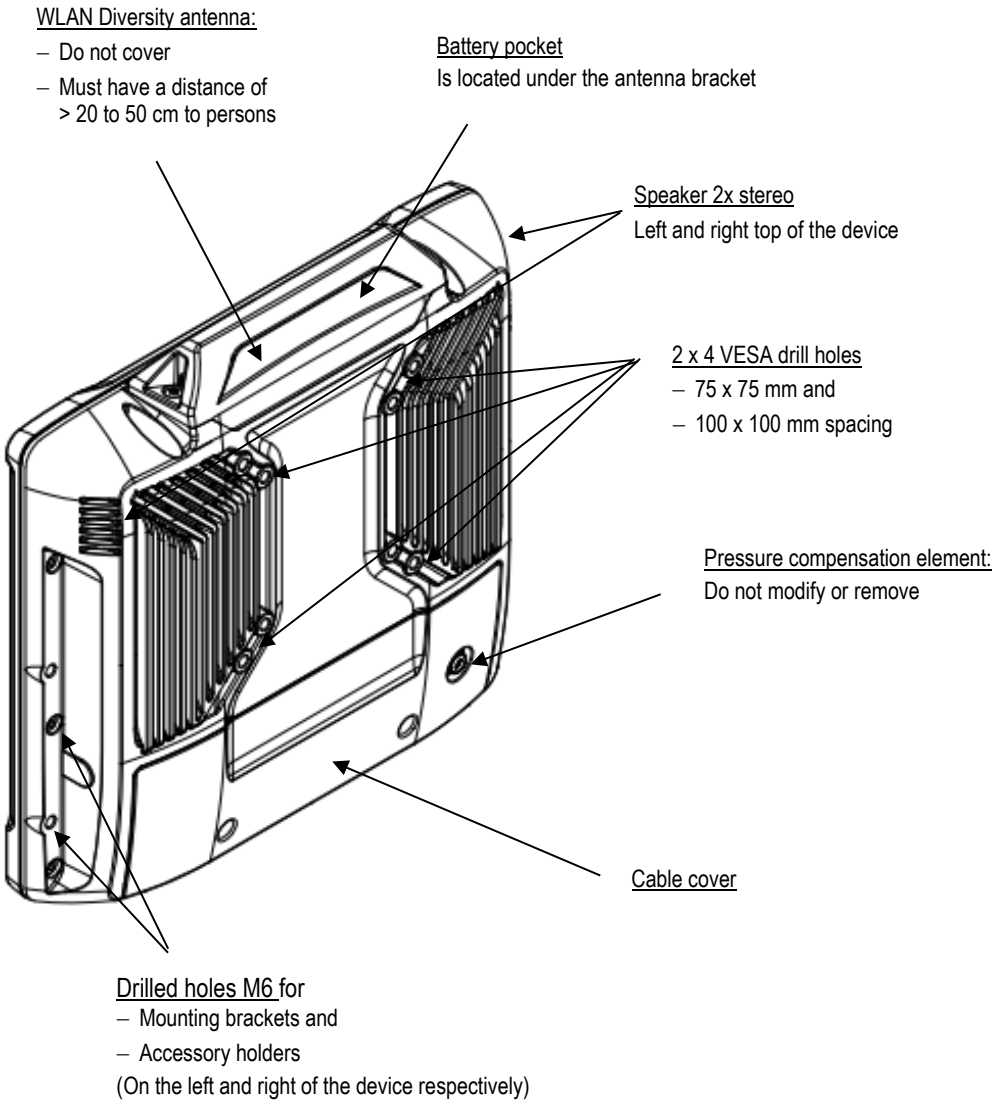
Salt water on the PCAP touchscreen can be interpreted as a "touch" and lead to malfunctions.

8.3.1. Multi-touch capability

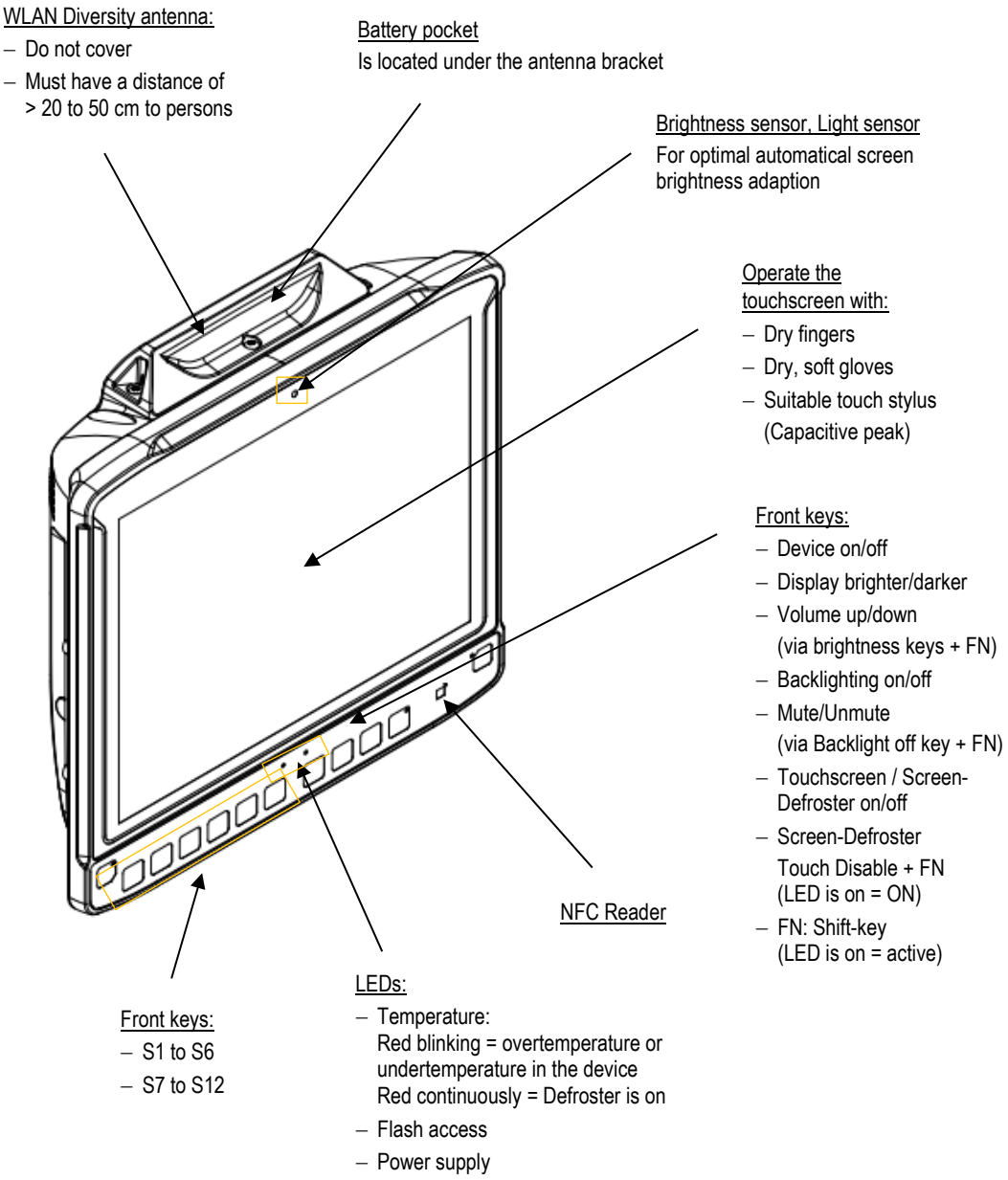
Depending on the installed operating system, the PCAP touchscreen of the DLT-V73 is multi-touch capable. This means it detects simultaneously up to **ten** fingers in **non-glove** mode / **two** fingers in **glove-mode** / and **one** finger in **thick-glove** mode.

8.4. Operation elements

8.4.1. Rear side DLT-V73



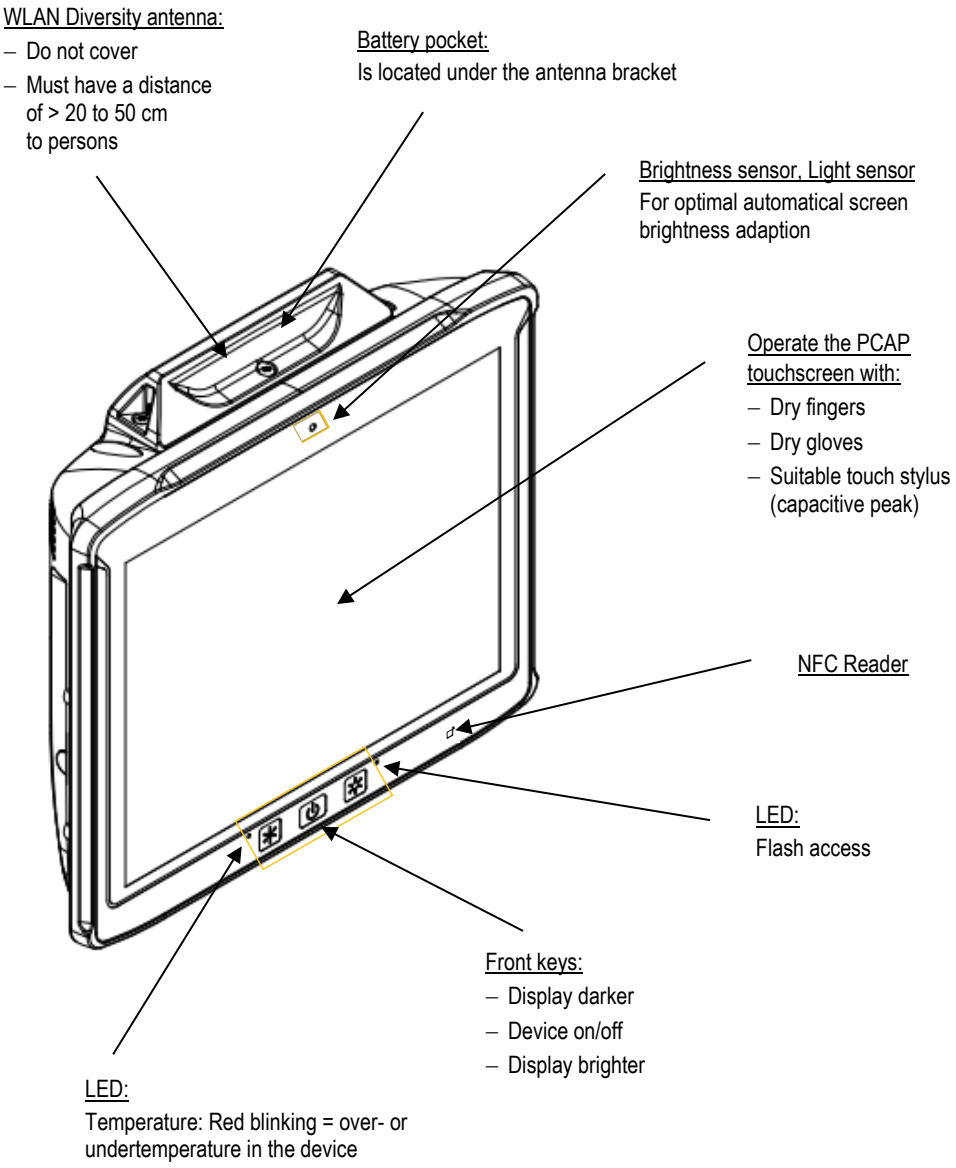
8.4.2. Front side DLT-V7310 and DLT-V7312



Note on the backlighting function on/off:

The DLT-V73 will continue to react to keyboard, mouse and touchscreen inputs even if the backlight is switched off.

8.4.3. Front side DLT-V7312 P+



8.5. Operating states (LEDs)

LED status		**DLT-V73 status**
Temperature 	Supply voltage 	
OFF	OFF	Initial state, idle time – waiting for a new ignition signal or for the POWER button after switch-off; no voltage supply
FLASHING	OFF	Temperature sensor faulty
ON	OFF	Computer will only start if the temperature in the device is in the range between -30 and +64 °C again.
OFF	ON	Computer start-up/normal operational state/shutdown delay time
ON	ON	Screen defroster active
FLASHING	ON	Ambient temperature value is outside the permitted range, i.e., < -30 °C or > +50 °C

8.6. Operating the DLT-V73 with UPS

The DLT-V73 is optionally available with an integrated UPS. The battery pack of the UPS is located in the battery pocket of the device under the antenna cap:

Fig. 8-1: Battery pocket with UPS DLT-V73

WARNING

Personal injury due to short-circuit, fire, chemical burns, toxic substances.

DLT-V73 devices with integrated UPS contain battery packs. These can ignite if handled or stored improperly (risk of fire), cause chemical burns or release toxic substances.

1. *Use care when handling battery packs.*
2. *Do not damage battery packs; do not drill through and do not crush or drop.*
3. *Do not allow water or other liquids to come into contact with the device (exercise particular caution with corrosive liquids).*
4. *Do not allow it to come into contact with fire.*

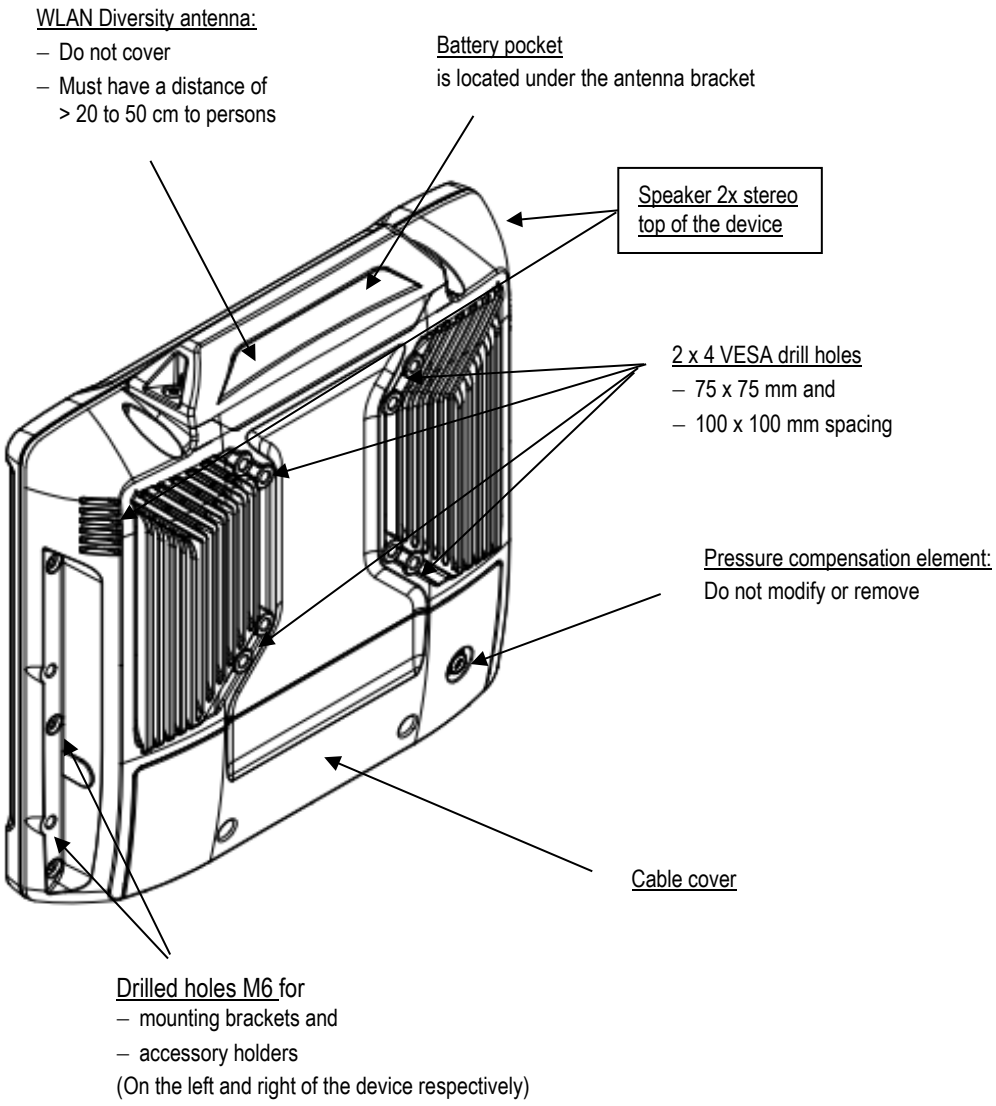
For details about the UPS, see section *15.1 Integrated UPS (optional)*.

The DLT-V73 is optionally available with an integrated UPS. The battery pack of the UPS is located in the battery pocket of the device under the antenna cap.

8.7. Internal speaker, sound

The DLT-V73 is equipped with two stereo speakers as standard (2 x 2,5 W). The system messages from the industrial PC are output via this speaker.

The internal speakers are configured in the audio settings for the operating system in question.



9. General Device Configuration

9.1. Operating systems (optional)

NOTE

Please find the latest overview of all supported operating systems in the DLT-V73 data sheets on our websites.

The following operating systems are available at the time of manual creation, May 2023:

- MS Windows 10 IoT Enterprise LTSC (Win10IoTEnt)
- MS Windows 11 IoT Enterprise, (Win11IoTEnt)
- Debian-based Linux

9.2. MS Windows (optional)

9.2.1. General

If a DLT-V73 with preinstalled operating system is placed into operation, this operating system will be loaded after the BIOS system messages. System-specific device drivers (e.g., for graphics, sound, network, touchscreen) are already installed.

In DLT-V73 units with a pre-installed operating system, the system is located on the **C**-partition.

When a DLT-V73 is started up for the first time without a pre-installed operating system, the user needs to carry out a number of steps that will vary depending on the system to be installed. Refer to the relevant operating system manual for specific instructions.

9.2.2. Configuring the front keys, automatic shutdown, etc.

The MDevice is used to configure DLT-V73 devices with a MS Windows operating system.

Configuration examples:

- Automatic shut down
- Front-key assignment
- Network settings

And depending on the equipment of the DLT-V73 also:

- Battery pack charge settings (only on devices with optional UPS)
- Screen defroster heating function (only on devices with screen defroster)
- Operation with gloves possible (only on devices with PCAP touchscreen)

NOTE *The manual "MDevice" is available on our websites.*

9.2.3. Energy options and battery pack durability

Valid for all MS Windows operating systems:

NOTICE ***Prevent system malfunction and property damage***

*All DLT-V73 devices with MS Windows have had the **power options** set at the factory so that the optimal duration of the battery pack can be achieved. Do not modify or deactivate the **power options.***

9.3. Linux (optional)

NOTE

The configuration of the DLT-V73 with Linux with regard to radio networks, touchscreen calibration, etc. is described in the "Advantech Linux Manual". Please contact our Technical Customer Support if required.

9.4. Automatic shut down

Functional description

The DLT-V73 is equipped with an automatic shutdown module.

If wired up accordingly, the DLT-V72 conveniently switches off together with the vehicle's ignition.

As disconnecting the power supply during operation can lead to data loss, the operating system needs to be shut down normally using the appropriate hardware and software installed on the system when the ignition is switched off.

The DLT-V73 is connected to the vehicle with three supply cables.

DC+ and DC- are directly connected to the power supply of the vehicle, the connection is of course run through fuses. The supply voltage connected is then linked to the DLT-V73's ignition input via a switch, for example, the key switch of the ignition (also with a fuse).

Sequence

When the vehicle ignition is turned on or the DLT-V73 POWER button is pressed, the DLT-V73 checks its internal temperature and runs a test to confirm that the automatic shutdown function is working.

If this check of the environmental conditions is successful, the DLT-V73 starts the operating system normally.

Once these checks have been successfully completed, the DLT-V73 starts the operating system. No environmental conditions (e.g., the internal temperature of the device or the state of the ignition input) are checked for one minute during startup.

After one minute, the DLT-V73's internal temperature and the state of the ignition input are constantly monitored.

If the DLT-V73's internal temperature reaches a critical level, a controlled shutdown of the operating system is carried out. The computer will remain switched off until the temperature is once again within the permitted range.

If the ignition input is grounded or isolated during normal operation of the DLT-V73, the device will switch to a delayed shut-off state.

The device will continue to operate normally in this state until the shut-off delay (e.g., 20 minutes) has elapsed.

If the ignition is turned on again during this shut-off delay, the DLT-V73 will revert to a normal operational state.

Once the shut-off delay (after run time) has elapsed, the operating system will shut down and the device will automatically shut down (e.g., after one minute or a signal from the operating system).

9.5. MSuite

In MSuite settings can be defined for MKeyboard, MTouch, MBlank and MPair.

9.5.1. MKeyboard

The “MKeyboard” software brings a complete standard keyboard with function keys and numeric pad directly to your DLT-V73 screen – with easy touch operation. Any entries made, for example, letters and numbers, are passed to the currently active application program.

Example for a software keyboard (the layout can be configured individually):

Fig. 9-1: MKeyboard

For subsequent installation, an installation program is available.

NOTE *The “MKeyboard Manual” is available on our websites.*

9.5.2. MTouch

With the help of the MTouch application, users without administrator rights can switch the PCAP touch sensitivity between different modes for better glove support during use.

MPair supports the following operating systems.

- MS Windows 10 IoT Enterprise LTSC (Win10IoTEnt)
- MS Windows 11 IoT Enterprise, (Win11IoTEnt)

For more details about the required installation and the handling of the MTouch application, please refer to the separately available **MDevice Manual** from our homepage.

www.advantech.com

9.5.3. MBlank

MBlank is used to overlay the display of VMTs with a black or a customer defined static image as soon as the vehicle is in motion. The driver is not distracted, and the running application can no longer be used. Once the vehicle is stationary again, the display is reactivated automatically.

MBlank supports the following operating systems.

- MS Windows 10 IoT Enterprise LTSC (Win10IoTEnt)
- MS Windows 11 IoT Enterprise, (Win11IoTEnt)

For more details about the required installation and the handling of the MBlank application, please refer to the separately available **MDevice Manual** from our homepage.

www.advantech.com

9.5.4. MPair

With the help of the MPair application, Bluetooth® capable 2D scanners can be connected to the terminal by scanning an onscreen barcode.

MPair supports the following operating systems.

- MS Windows 10 IoT Enterprise LTSC (Win10IoTEnt)
- MS Windows 11 IoT Enterprise, (Win11IoTEnt)

NOTE

MPair only supports the connection of scanners with the Bluetooth® profile SPP "Serial-Port-Profile". USB-HID Bluetooth® connections are not supported by MPair.

For a more detailed description of the configuration to be made and the handling of the MPair application, please refer to the separately available **MDevice Manual** from our homepage.

www.advantech.com

10. WLAN Configuration

10.1. Safety notes

CAUTION

Danger of radiation.

DLT-V73 devices with radio technology emit high frequency energy (abbreviation: HF). To protect persons and domestic animals against HF radiation:

1. *Observe section 2.4 HF Radiation in the Safety Chapter of this manual.*
2. *Observe all applicable regulations for your deployment location/country with regard to operating channels, radio frequencies and the maximum permissible transmitting power.*

   Examples of country-specific regulations:

Region	Radio approval
EU	RED (formerly R&TTE)
China	SRRC
Japan	TELEC
Canada	Canada IC
USA	FCC
India	WPC

Antenna solutions for use in Germany

The Advantech antenna solutions are based on the prevailing IEEE 802.11 standard. This standard allows radio data transfer at rates from 1 Mbps to 54 Mbps (867 Mbit/s if using IEEE 802.11ac) using the 2.4 GHz and 5 GHz frequency band.

Information on radio performance

The consistency of the radio performance is dependent on the following factors:

- Radio card (set transmission power)
- Connecting cables
- Antenna gain

Help table for the correct setting:

Translation between mW and dBm																						
dBm	-1	2	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
mW	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60	80	100	125	150	200	250

Fig. 10-1: WLAN table mW and dBm

10.2. Preparation work at the factory

The following preparations have already been carried out at the factory for the optional radio functionality of the DLT-V73:

- The radio card and the corresponding drivers are installed.
  (Intel 6E AX210.NGWG.II)
- A default profile with basic settings is defined.

NOTICE ***Prevent system malfunction and property damage***

- *Radio cards are located inside the devices and are not accessible from the outside. Only the manufacturer and its authorized service centers may open the device and install/remove radio cards.*

10.3. OS-specific configuration

Observe the following manuals to find more details about OS-specific configuration:

OS	WLAN configuration description
DLT-V73 with MS-Windows	In the following manual sections
DLT-V73 with Linux	In manual “Advantech Linux“; please contact our Technical Customer Support if required.

10.4. Customer-specific WLAN profiles

To create a customer-specific profile:

1. Use the configuration program that is already factory-installed on the DLT-V73 (Windows).
2. Observe the description of the configuration programs in the following sections.

Radio cards	OS	Configuration program
Intel 6E (AX210.NGWG.II)	Windows	Wireless Zero Configuration (abbreviation: WZC) No password required
	Linux	Linux Configuration Utility

10.5. Windows Zero Configuration (WZC)

WZC (Windows Zero Configuration) is a tool for automatic WLAN configuration in MS Windows.

NOTE

Comprehensive information can be found in the WZC Online Help.

Using the Intel 6E (AX210.NGWG.II) WLAN driver, the WZC tool is used to connect and set up the WLAN profile as described in more detail in the next chapter.

10.6. Intel 6E (AX210.NGWG.II) WLAN Driver

10.6.1. Area of application

This chapter describes the **Intel 6E (AX210.NGWG.II) WLAN driver** under the following OS:

- MS Windows 10 IoT Enterprise LTSC (Win10IoTEnt)
- MS Windows 11 IoT Enterprise, (Win11IoTEnt)

10.6.2. Driver download

The currently available WLAN driver can be downloaded from the following Link.

Link to available drivers: www.advantech.com

Once the download has completed, the contents of the ".zip" directory on the desktop must be unzipped.

NOTE

Requirements:

*The following steps should be performed as the **Administrator** for the installation process.*

10.6.3. After image reinstallation: Driver installation

If the image has been reinstalled, the DLT-V73 must be set up again using the Intel 6E (AX210.NGWG.II) WLAN driver.

10.6.4. “Standard” Driver installation Win10IoTEnt / Win11IoTEnt

1. Open the corresponding installation directory.
2. Run “**WiFi-22.200.0-Driver64-Win10-Win11.exe**” to start the installation. (Version can be different!)

NOTE *The following installation example shows the driver **22.200.0** for Win10IoTEnt / Win11IoTEnt.*

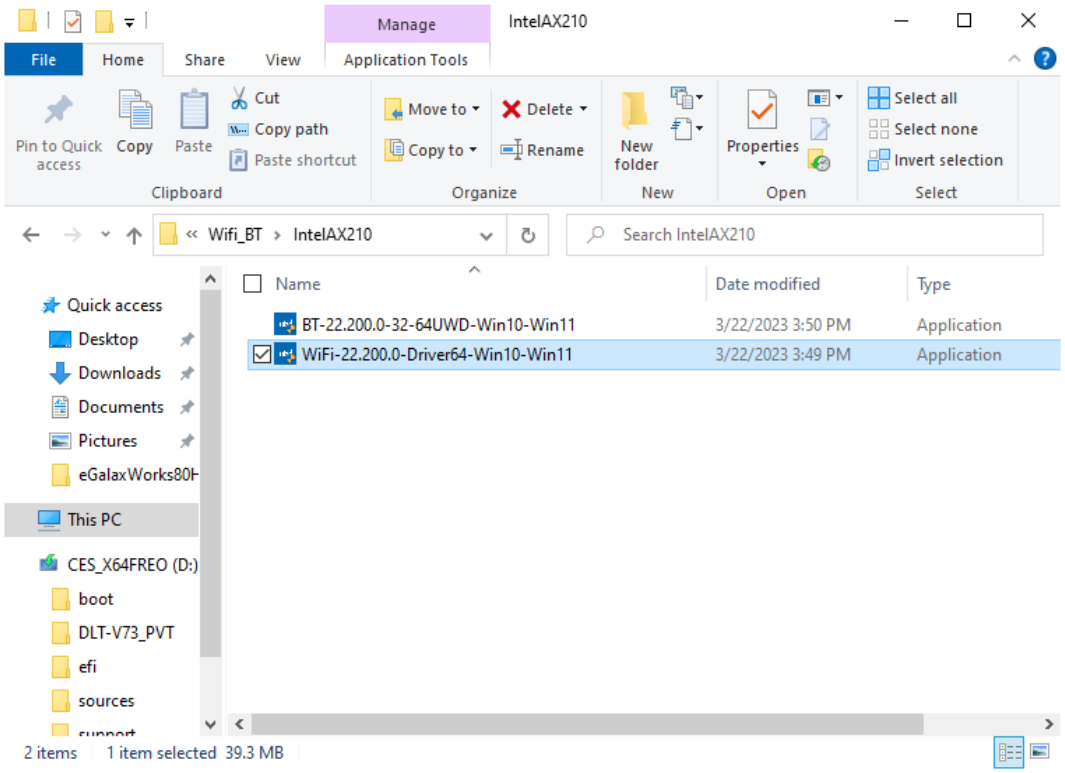


Fig. 10-2: Wi-Fi driver for Win10IoTEnt/ Win11IoTEnt (Intel 6E AX210.NGWG.II) WLAN)

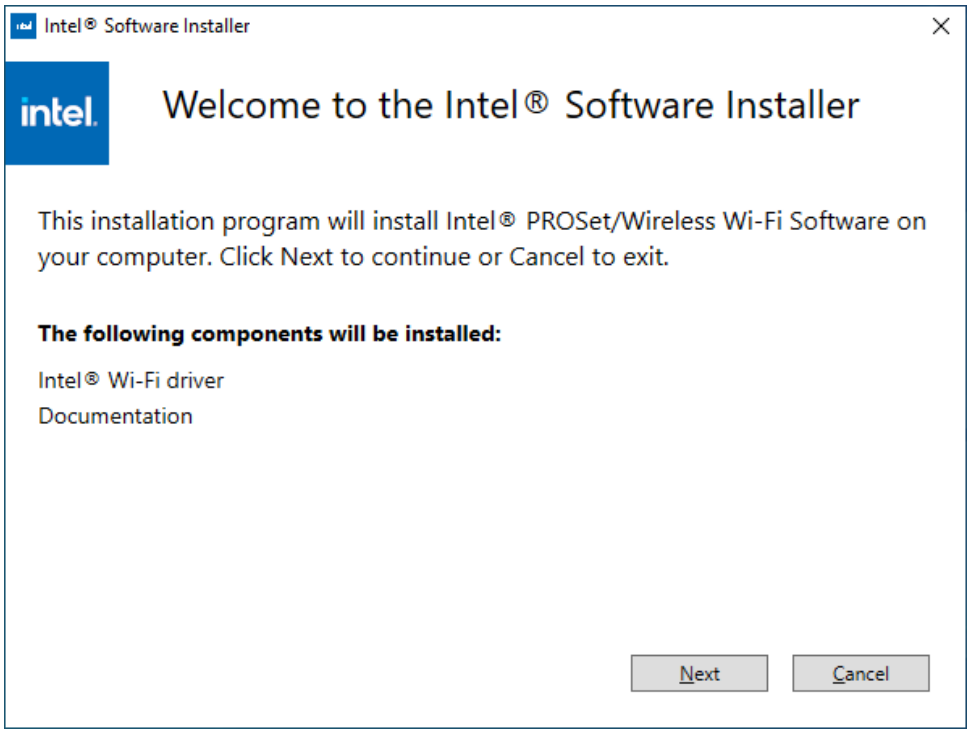


Fig. 10-3: (Intel 6E AX210.NGWG.II WLAN) driver installation welcome dialog

3. with **Next** continue installation

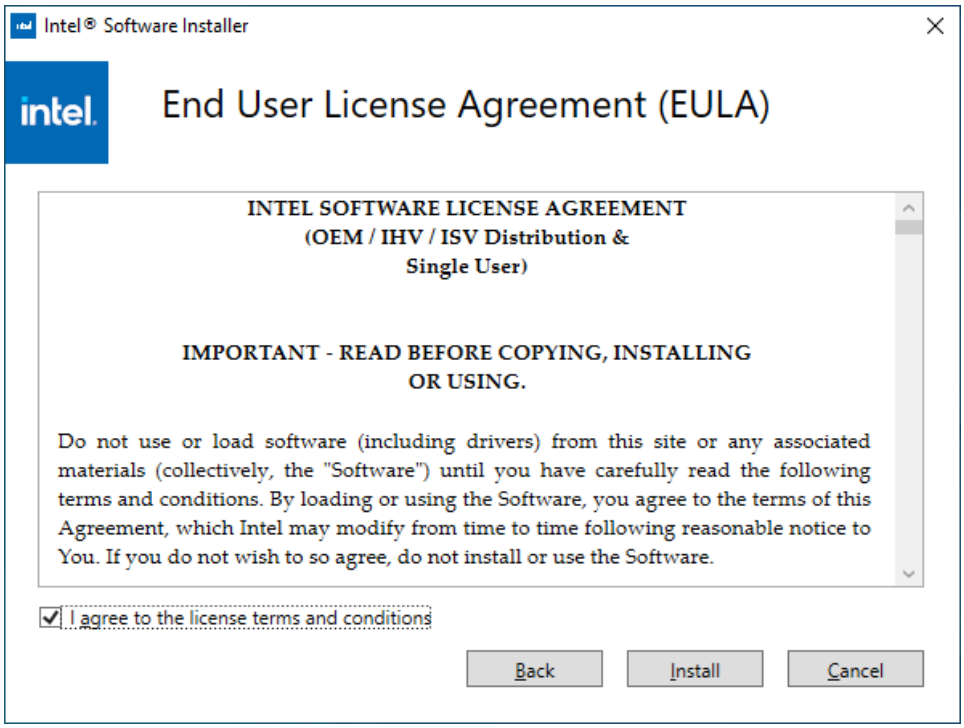


Fig. 10-4: Intel 6E AX210.NGWG.II WLAN driver installation EULA Agreement

4. Set check mark on “**I agree**…” and continue the installation with **Install.**

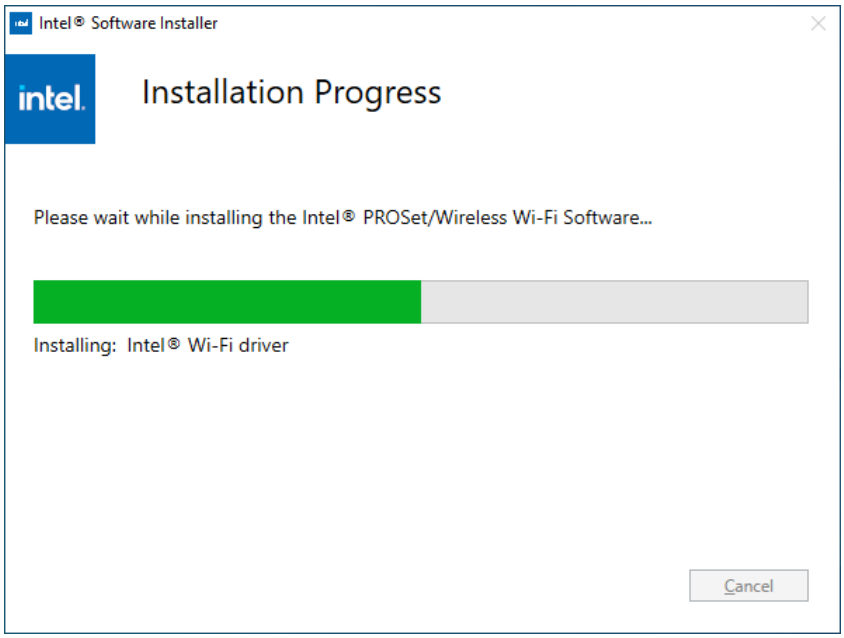


Fig. 10-5: Intel 6E AX210.NGWG.II WLAN driver installation starts

5. The driver installation is **performed**.

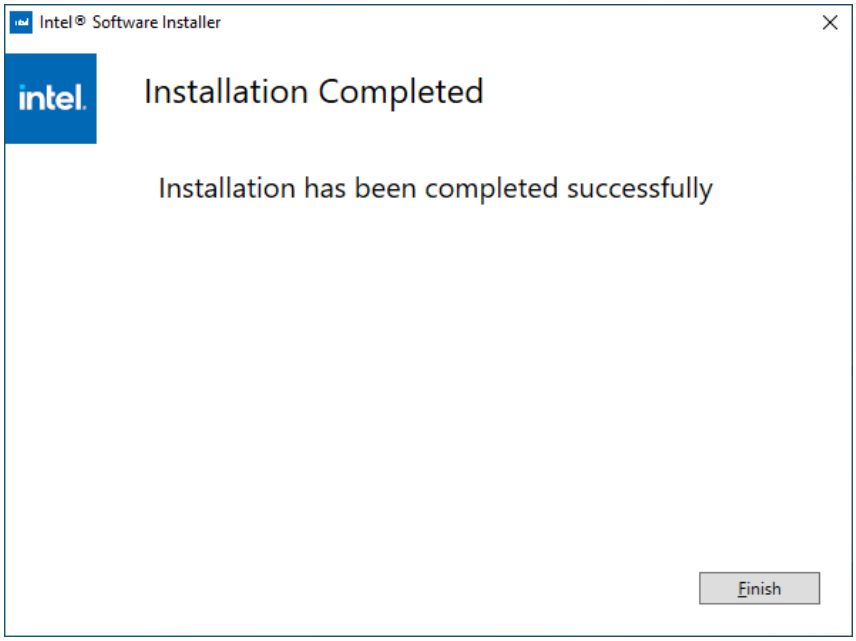


Fig. 10-6: Intel 6E AX210.NGWG.II WLAN driver installation Exit with Finish

6. Exit the driver installation with **Finish**.

The WLAN configuration is then carried out using the WZC tool under Windows.

10.6.5. Intel 6E AX210.NGWG.II “Roaming” Setting

For an optimal “roaming” result, we recommend using the Windows device manager to manually adjust the following setting after the standard WLAN driver installation.

1. Open Windows Device Manager.

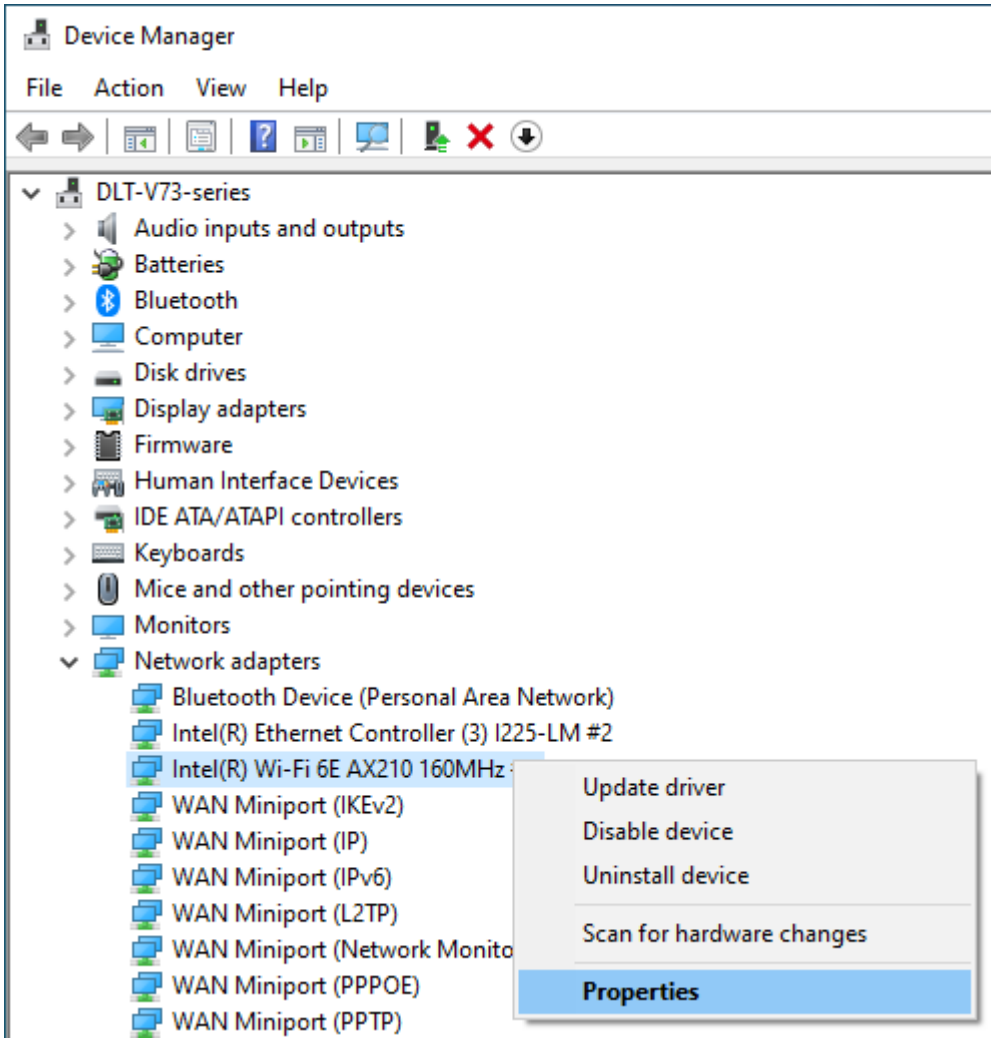


Fig. 10-7: Device Manager network adapter Properties (Intel)

2. Open right click option **Properties** of the network adapter **Intel® Wi-Fi 6E…**

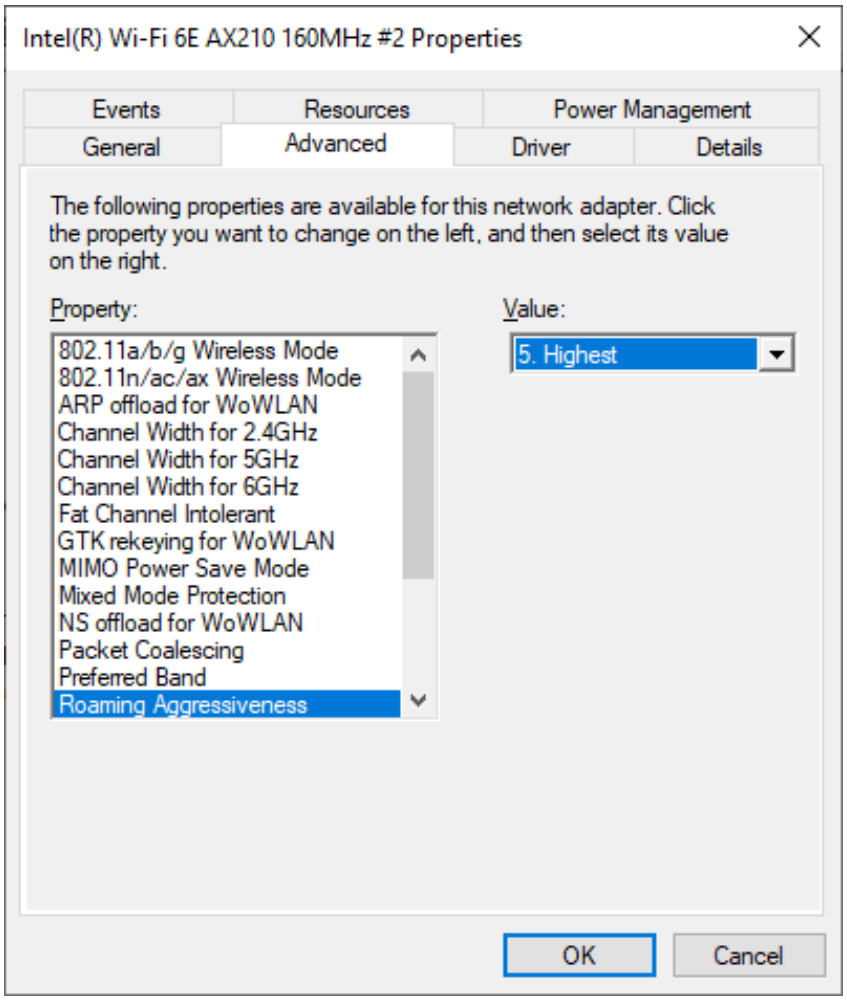


Fig. 10-8: Advanced – Roaming aggressiveness Property

3. Under the **Advanced** tab, set the **Roaming aggressiveness** property to value **5. Highest.**

4. Confirm the setting made with **OK.**

10.7. Intel 6E (AX210.NGWG.II) BT driver

In addition to the WLAN driver, Intel 6E (AX210.NGWG.II) provides a suitable Bluetooth® driver separately.

10.7.1. Area of application

This chapter describes the Intel 6E (AX210.NGWG.II) **BT driver** under the following OS:

- MS Windows 10 IoT Enterprise LTSC (Win10IoTEnt)
- MS Windows 11 IoT Enterprise, (Win11IoTEnt)

Required: DLT-V73 with radio card **Intel 6E (AX210.NGWG.II)**

10.7.2. Driver download

The currently available Intel 6E (AX210.NGWG.II) BT driver can be downloaded from the following Link.

Link to available Drivers: www.advantech.com

Once the download has completed, the contents of the ".zip" directory on the desktop must be unzipped.

NOTE

Requirements:

*The following steps should be performed as the **Administrator** for the installation process.*

10.7.3. After image reinstallation: Driver installation

If the image has been reinstalled, the DLT-V73 must be set up again using the Intel 6E (AX210.NGWG.II) BT driver. One driver is available.

10.7.4. “Standard” Driver installation Win10IoTEnt / Win11IoTEnt

1. Open the corresponding installation directory.
2. Run **“BT-22.200.0-32-64UWD-Win10-Win11.exe”** to start the installation. (Version can be different)

NOTE *The following installation example shows the driver **22.200.0** for Win10IoTEnt / Win11IoTEnt.*

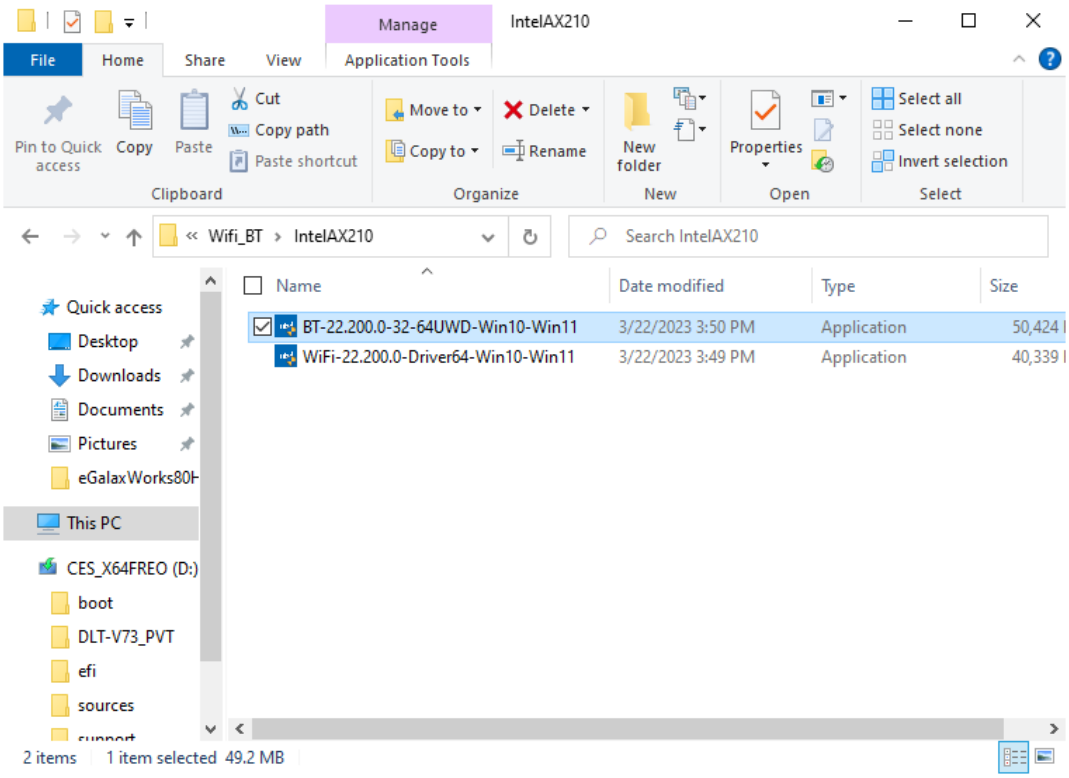


Fig. 10-9: BT driver for Win10IoTEnt / Win11IoTEnt (Intel 6E AX210.NGWG.II)

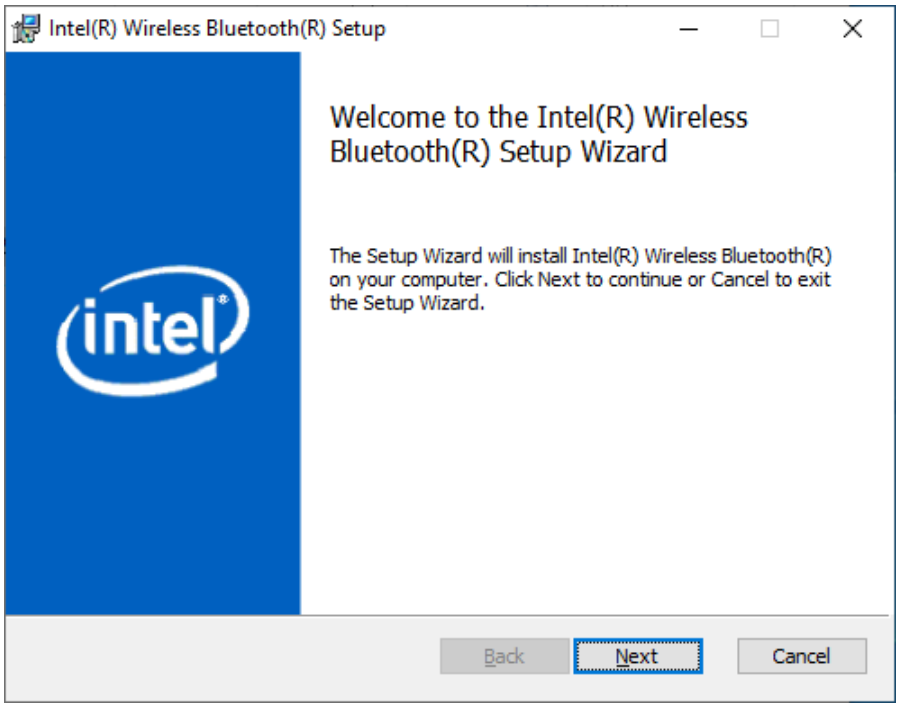


Fig. 10-10: Intel 6E (AX210.NGWG.II) BT driver installation welcome dialog

3. Continue the installation with **Next.**

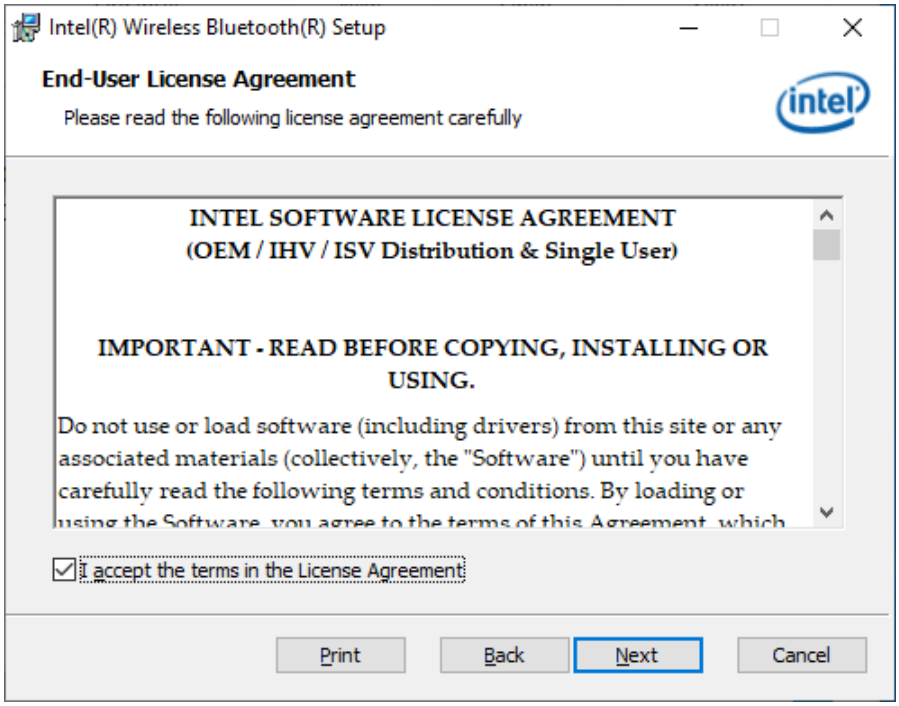


Fig. 10-11: Intel 6E (AX210.NGWG.II) BT driver installation License Agreement

4. Set check mark on “**I accept …**” and continue the installation with **Next.**

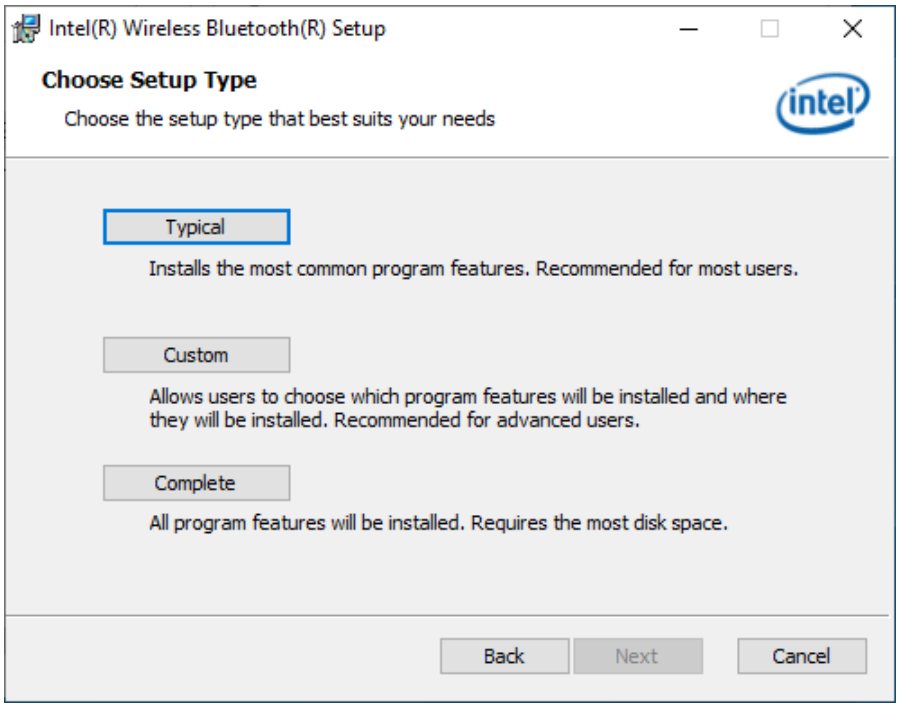


Fig. 10-12: Intel 6E (AX210.NGWG.II) BT driver installation Type

5. Continue the installation of the required files with **Typical**.

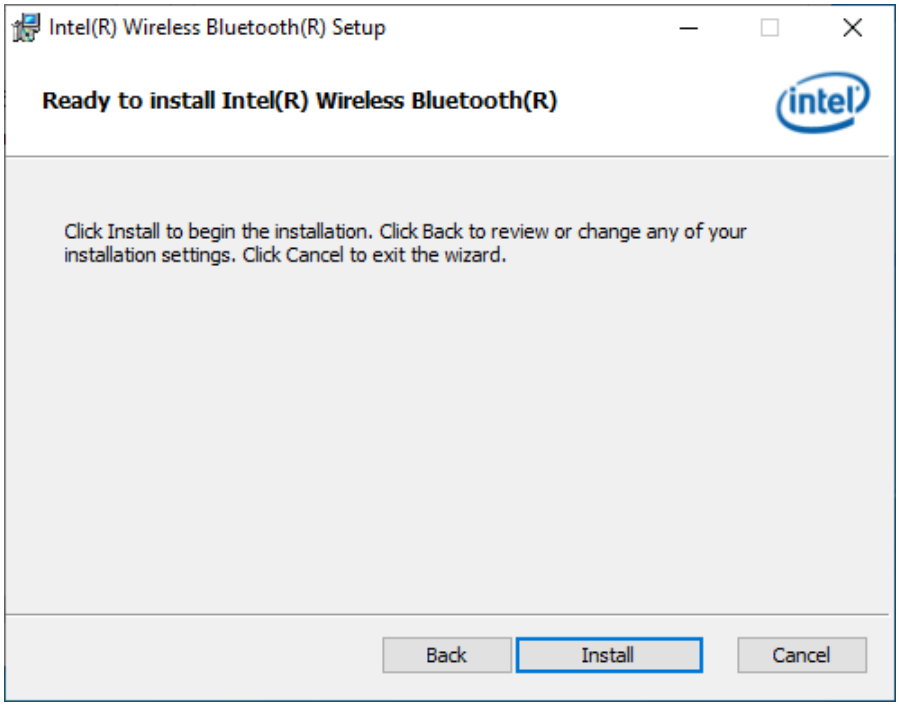


Fig. 10-13: Start Intel 6E (AX210.NGWG.II) BT driver installation

6. Start the driver installation with **Install**

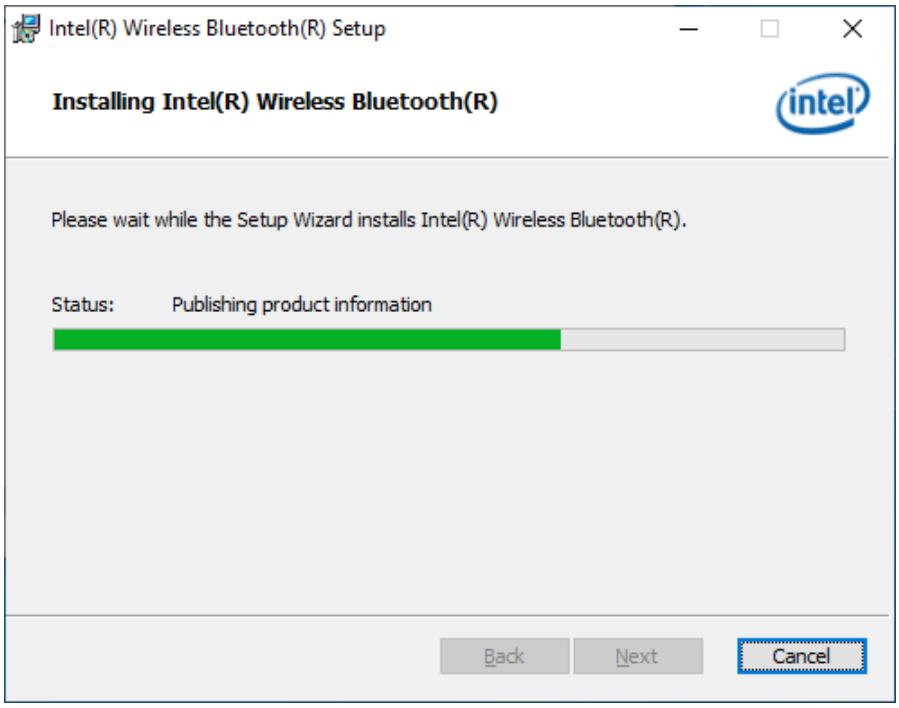


Fig. 10-14: Intel 6E (AX210.NGWG.II) BT driver installation is running

7. Driver installation is **completed**.

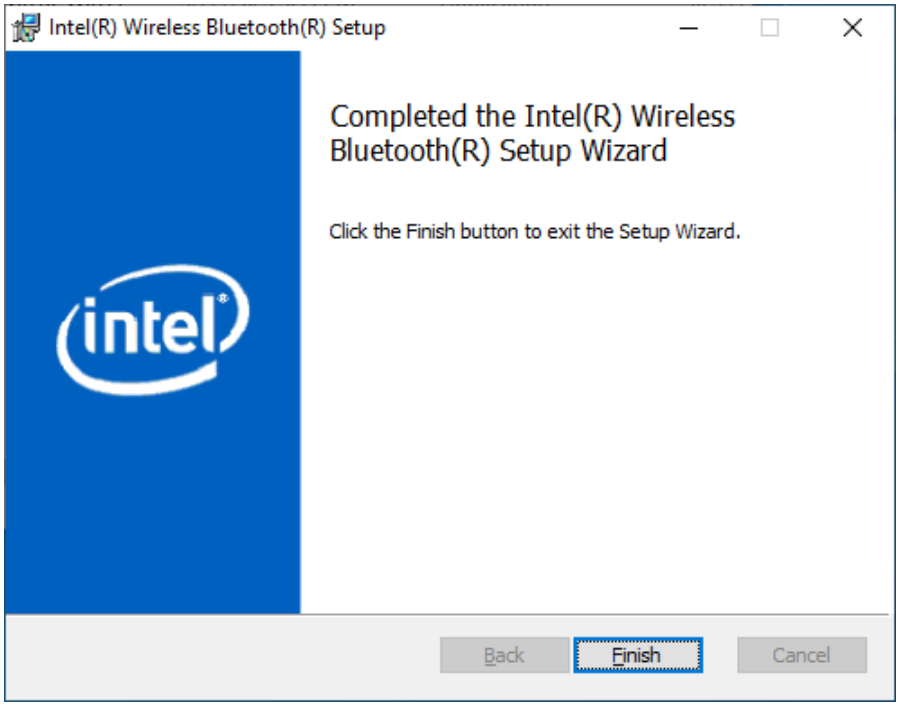


Fig. 10-15: Exit the driver installation with Finish

8. Exit the driver installation with **Finish**.

11. WWAN Configuration

11.1. Safety notes

CAUTION

Danger of radiation.

DLT-V73 devices with radio technology emit high frequency energy (abbreviation: HF). To protect persons and domestic animals against HF radiation:

1. *Observe section 2.4 HF Radiation in the Safety Chapter of this manual.*
2. *Observe all applicable regulations for your deployment location/country with regard to operating channels, radio frequencies and the maximum permissible transmitting power.*

   Examples of country-specific regulations

Region	Radio approval
EU	RED (formerly R&TTE)

11.2. Preparation work at the factory (delivery status)

The following preparations have already been carried out at the factory for the optional WWAN functionality of the DLT-V73:

- The WWAN radio card and the corresponding drivers are installed.
- GNSS is enabled at the factory

NOTICE ***Prevent system malfunction and property damage***

Radio cards are located inside the devices and are not accessible from the outside. Only the manufacturer and its authorized service centers may open the device and install/remove radio cards.

11.3. SIM card for WWAN (customer-specific) and M2M SIM

A SIM card is required in addition to the WWAN card. The SIM card must be plugged in into the SIM card slot underneath the DLT-V73 antenna cap.

A M2M SIM card is supported, an eSIM card is not supported.

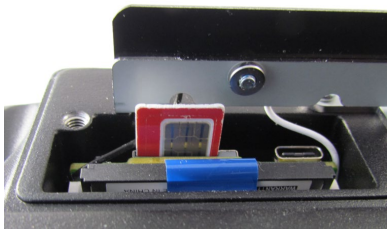


Fig. 11-1: SIM-card-slot unter the antenna cap
(with Taiwan Anjie Electronics antenna)

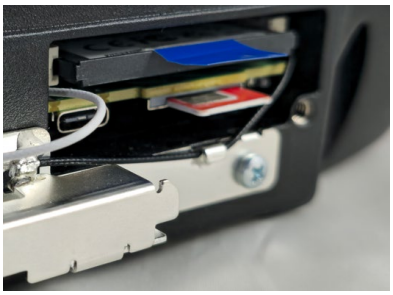


Fig. 11-2: SIM-card-slot unter the antenna cap
(with Taoglas antenna)

NOTICE ***Prevent system malfunction and property damage***

Before opening the antenna:

Please refer to chapter 7.2 Connectors under the antenna to find information about correctly opening and closing the antenna (required tools, etc.). Inserting the SIM card: DLT-V73 must be switched off!

NOTE *If the SIM card contains a PIN, the customer must set up an application for the PIN query. For this reason, we recommend not using a PIN*

11.4. Configuration of Radio card QUECTEL EM05/EM06

The following information is valid for the radio card **QUECTEL**.EM05/EM06. Its precise designation is:

- USA: QUECTEL EM06-A
- Europe / Korea: QUECTEL EM06-E
- China: QUECTEL EM05-CE

The WWAN configuration is identical for both radio cards. For this reason, the abbreviation **QUECTEL EM05/EM06** is used.

11.4.1. Driver-Download

The currently available WWAN driver can be downloaded from the following Link.

Link to available drivers: www.advantech.com

Once the download has completed, the contents of the ".zip" directory on the desktop must be unzipped.

NOTE

Requirements:

*The following steps should be performed as the **Administrator** for the installation process.*

11.4.2. „Standard“ Driver installation Win10IoTEnt / Win11IoTEnt

In the section below, the provider **Vodafone** is used as an example. Adjust the settings for your provider.

1. Open the corresponding installation directory.
2. Run „**Setup.exe**“ to start the installation. (Version can be different)

NOTE *The following installation example shows the driver Quectel_Windows_USB_Driver(Q)_MBIM_**V1.3.5** for Win10IoTEnt / Win11IoTEnt.*

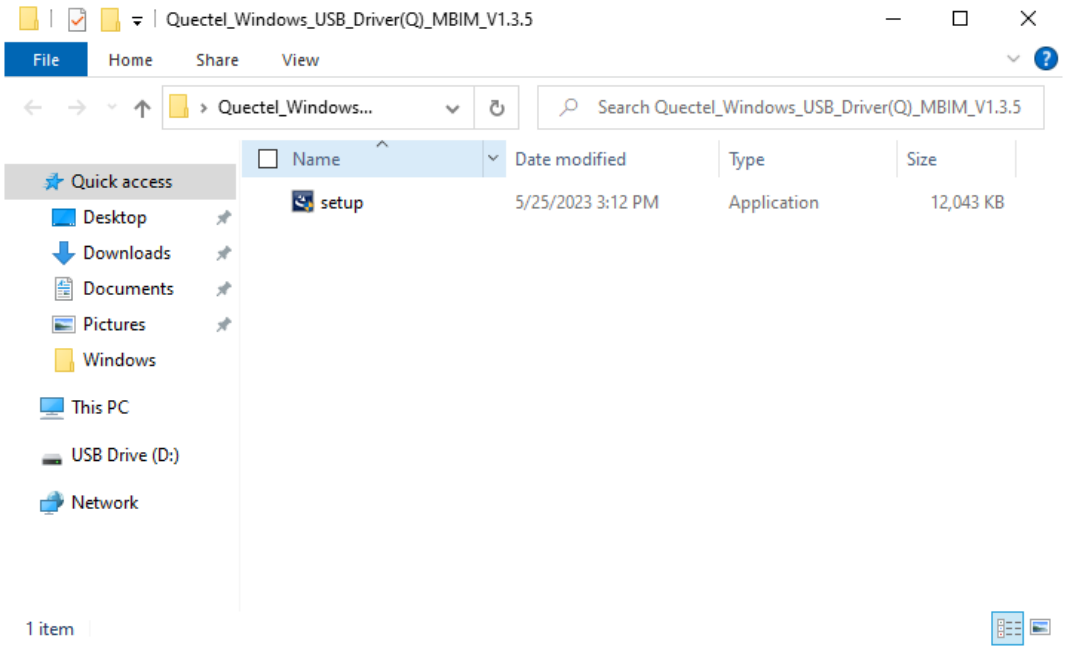


Fig. 11-3: QUECTEL EM05/EM06 - WWAN driver for Win10IoTEnt/ Win11IoTEnt

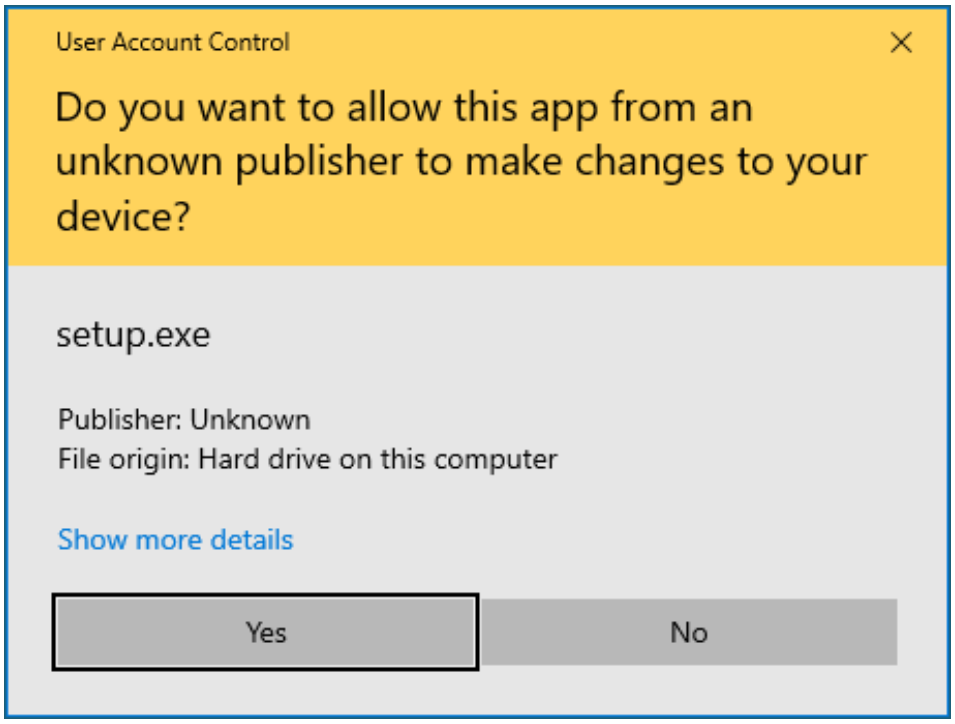


Fig. 11-4: QUECTEL EM05/EM06 - UAC request - allow app to make changes

3. Confirm the UAC request with **Yes**

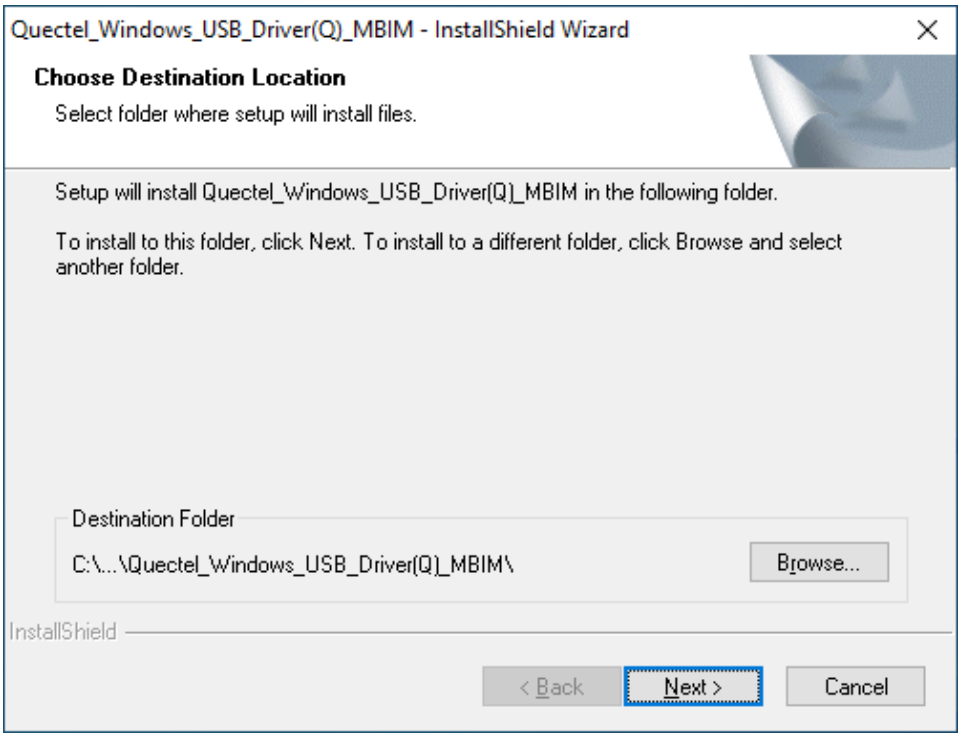


Fig. 11-5: QUECTEL EM05/EM06 – select installation directory

4. Continue the installation with **Next**

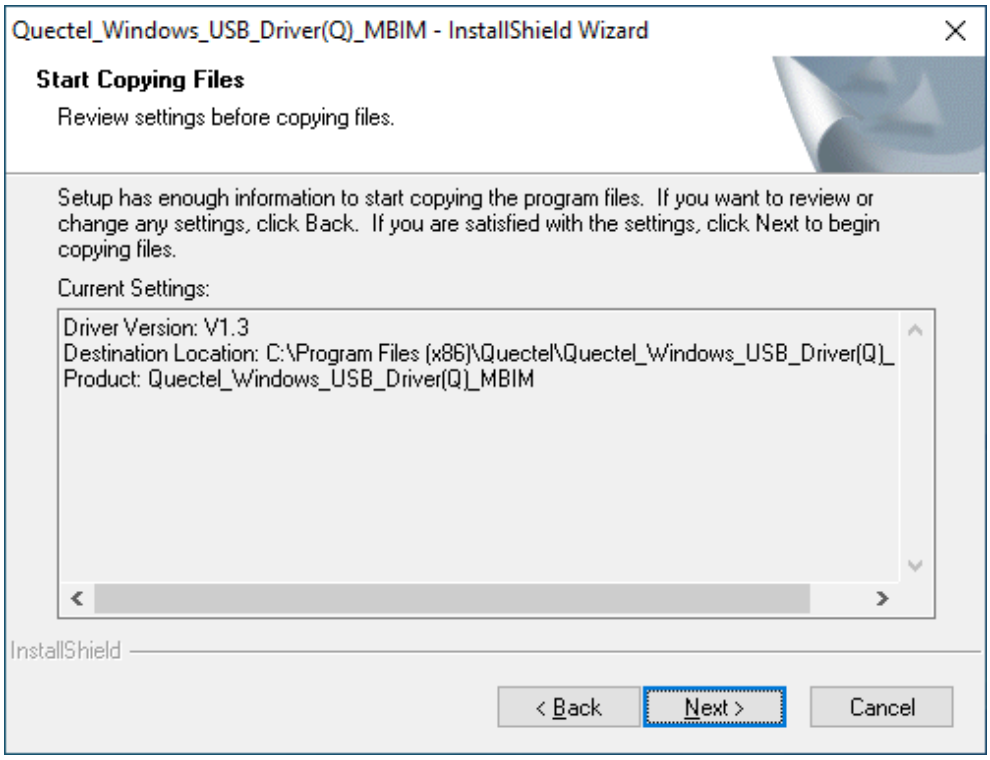


Fig. 11-6: QUECTEL EM05/EM06 – Start Copying Files

5. Continue the installation with **Next**

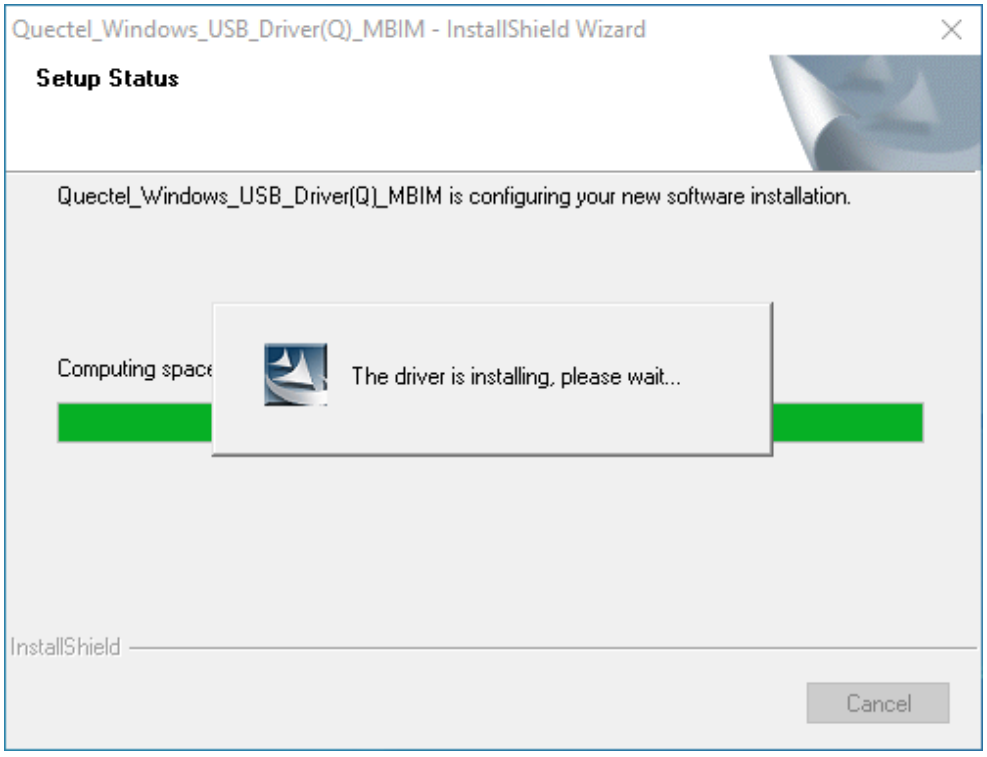


Fig. 11-7: QUECTEL EM05/EM06 – WWAN driver installation is running

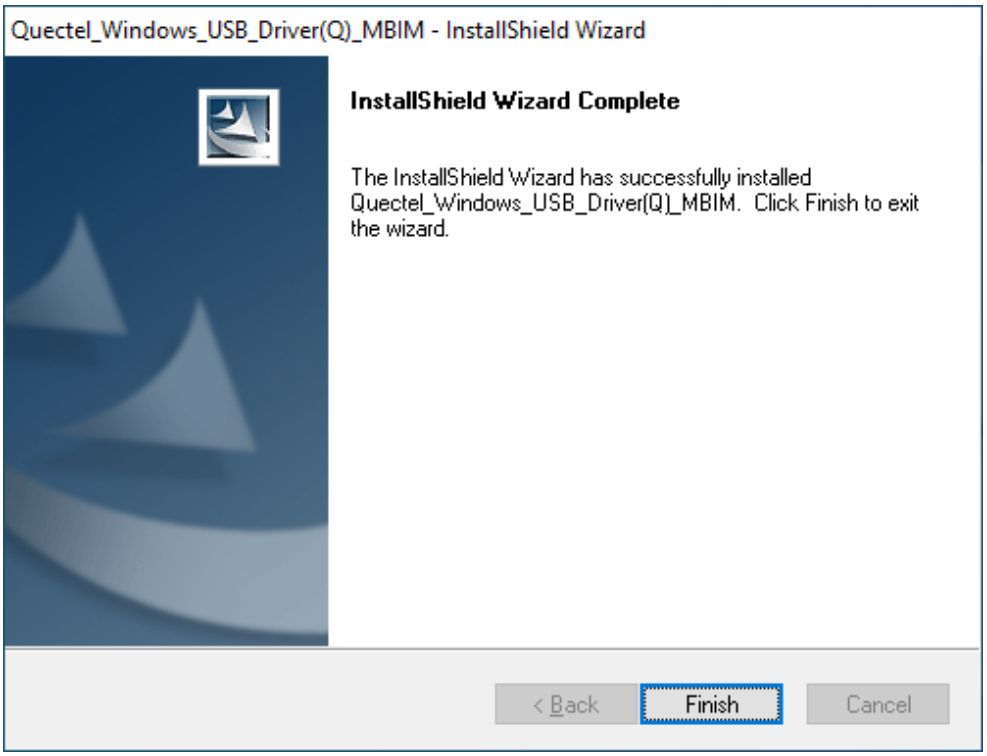


Fig. 11-8: QUECTEL EM05/EM06 – Exit the driver installation with Finish

6. Exit the driver installation with **Finish**.

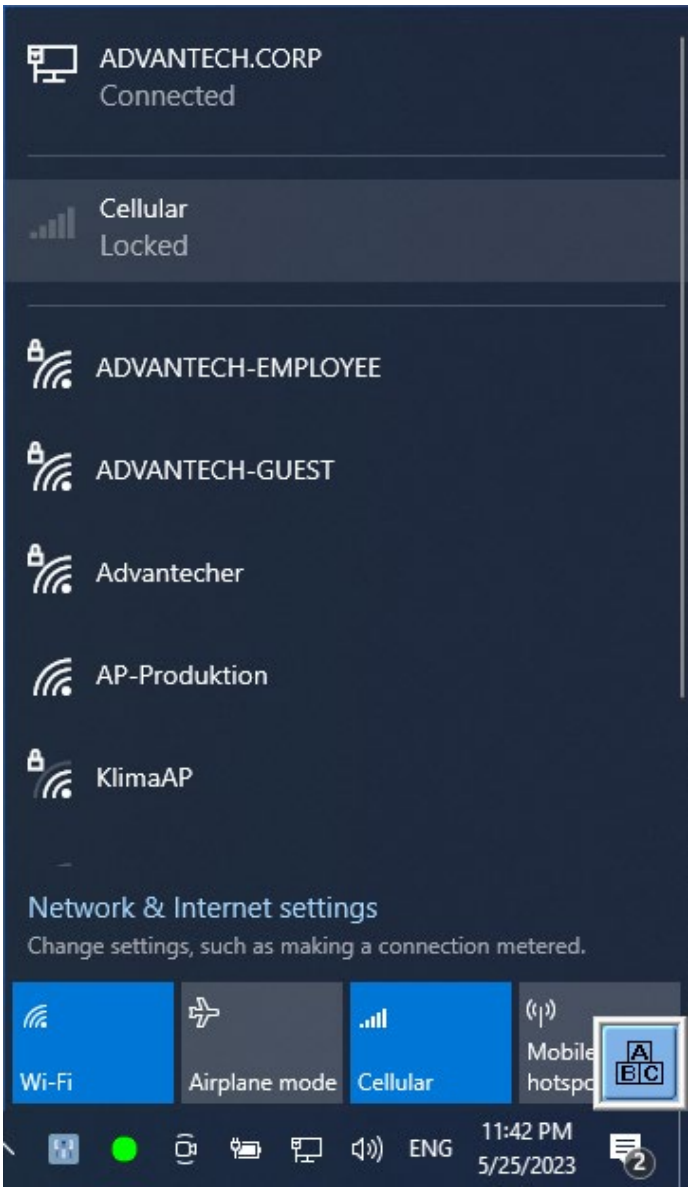


Fig. 11-9: QUECTEL EM05/EM06 – Taskbar WWAN Option Cellular (Locked)

7. Within the taskbar the option **Cellular** is displayed.

NOTE *The example installation shows the addition **Locked**, because the PIN request on the SIM-card is active.*

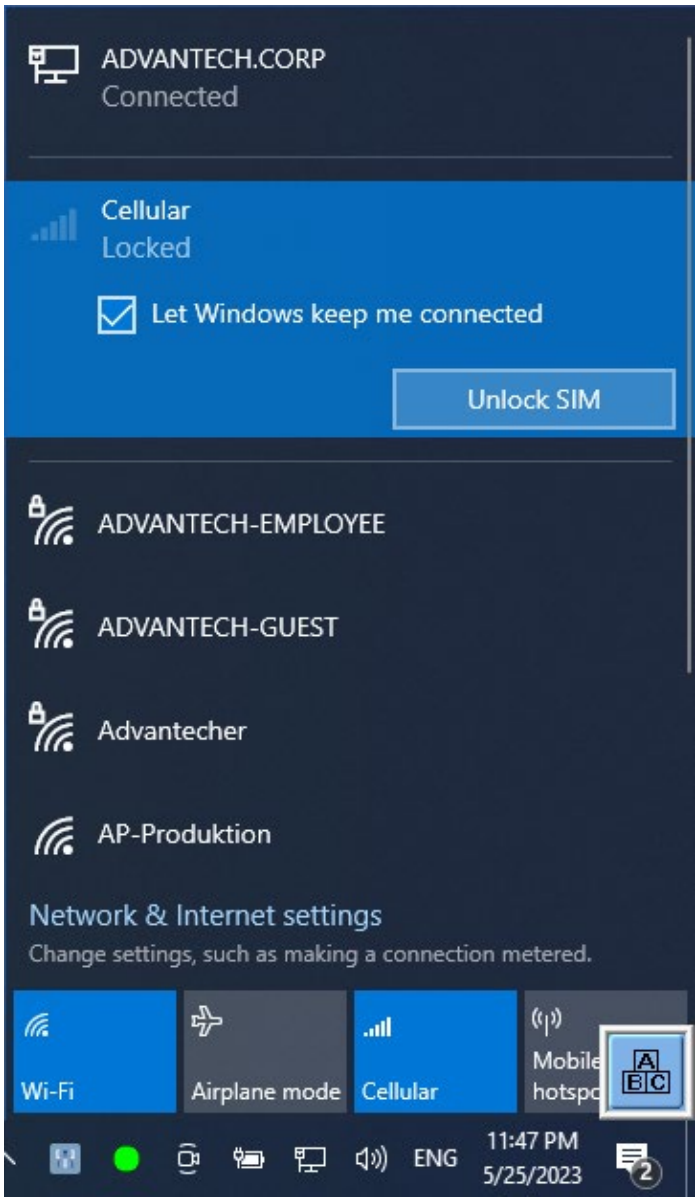


Fig. 11-10: QUECTEL EM05/EM06 – Taskbar WWAN Option Cellular (Unlock SIM)

8. Activate Checkbox “**Let Windows keep me connected**” and continue with Unlock SIM

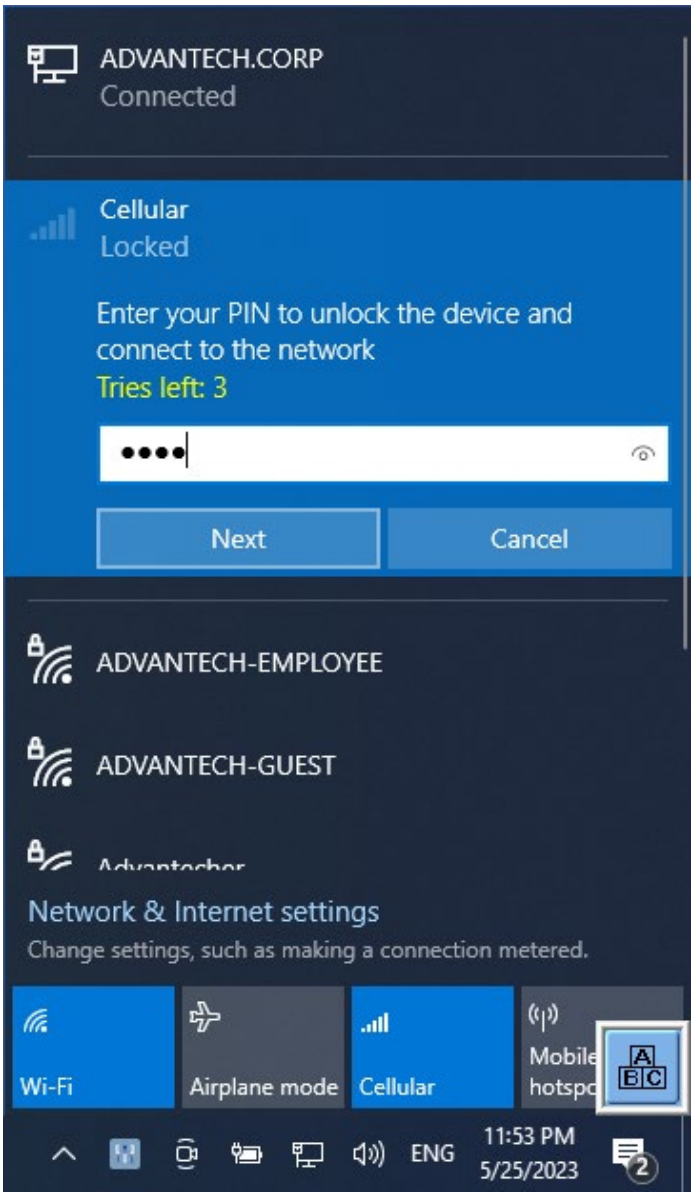


Fig. 11-11: QUECTEL EM05/EM06 – Taskbar WWAN Option Cellular (Enter PIN)

9. Enter **PIN Code** of the SIM card and confirm with **Next**

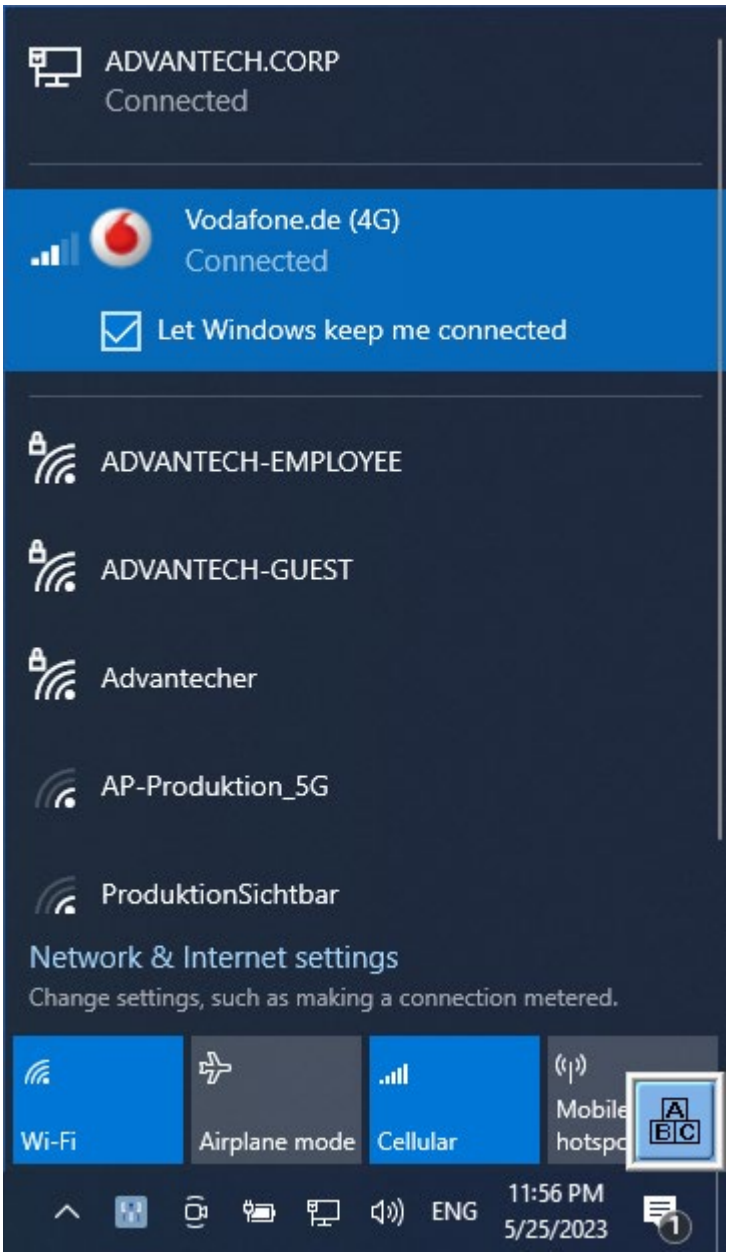


Fig. 11-12: QUECTEL EM05/EM06 – Taskbar WWAN Option Cellular (Status Connected)

10. The status changes to **Connected.**

NOTE *In addition, depending on the provider used, additional information on the mobile communications standard used (4G in the example) and the current signal strength are displayed.*

11.4.3. Trouble Shooting

Test virtual COM ports

In the device manager it is possible to test that the virtual COM ports are correctly set. If they are not correctly set, they must be modified as appropriate.

The virtual COM ports must be set up as shown in the figure:

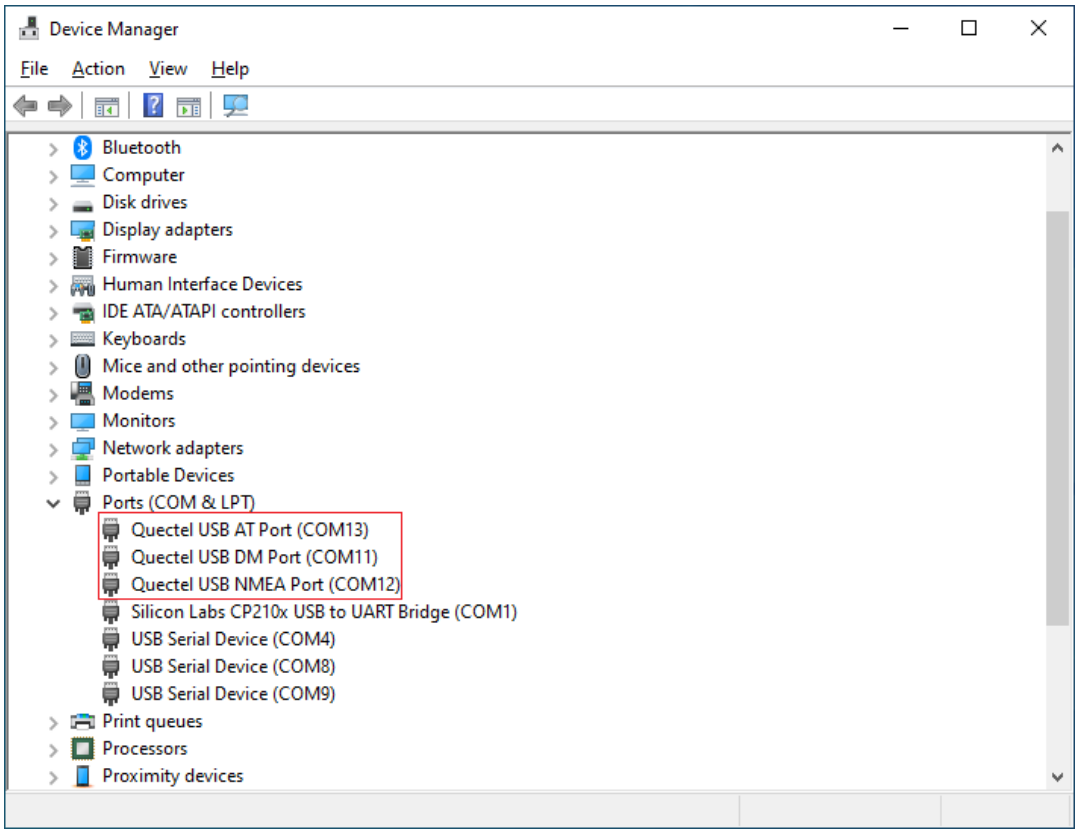


Fig. 11-13: QUECTEL EM05/EM06 - QUECTEL EM05/EM06 - virtual COM-Ports

Description

Quectel USB AT Port	Used to set and read out the module configuration and connection data using AT commands. Herewith e.g. the GNSS function can be switched on or off for the transmission of NMEA data
Quectel USB DM Port	Special diagnostic port. This can be used, for example, to update the module firmware with the aid of a Quectel Utilite.
Quectel USB NMEA Port	Port for receiving GNSS position data (NMEA). Further notes on reading out are described in more detail in the next paragraph.

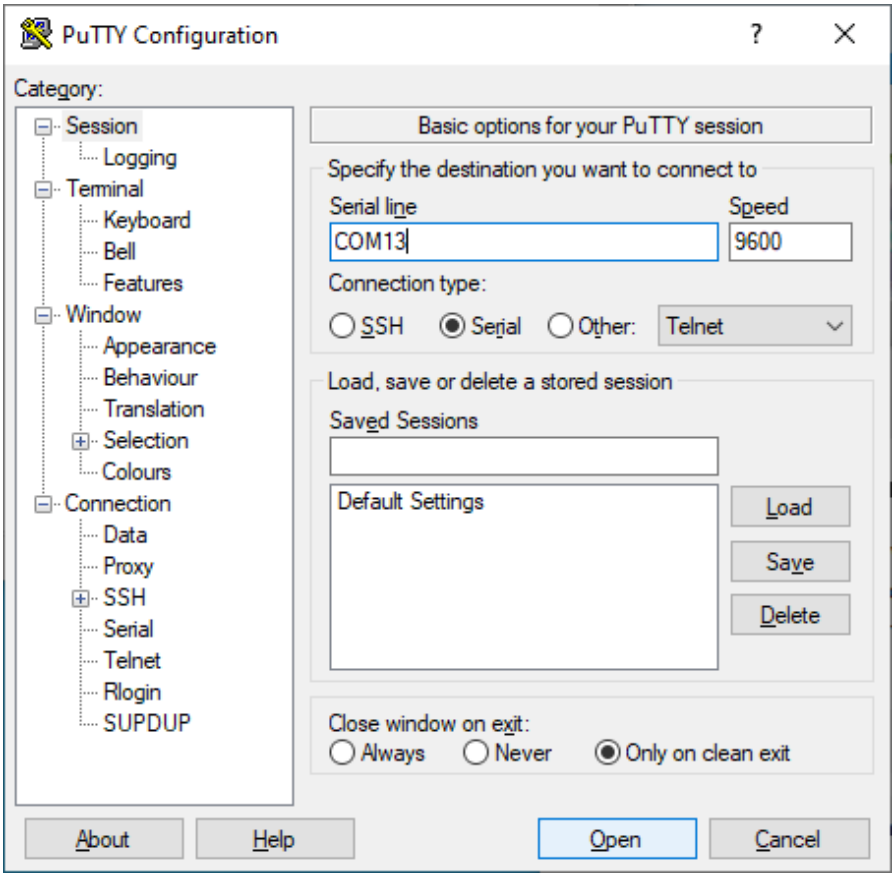
Check communication DLT-V73 and WWAN-radio card

To check whether the DLT-V73 can communicate with the WWAN radio card, the open-source software Putty can be used, for example. You can download this software, for example, from the following URL (website available at the time of writing these operating instructions, as of May 2023):

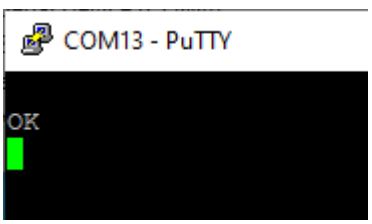
Download PuTTY: latest release (0.78) (greenend.org.uk)

Perform the following steps:

1. Open the **AT-Port** via **Putty.** (Port number can be different!)



2. Enter the command **at** in the window and confirm with **Return**.



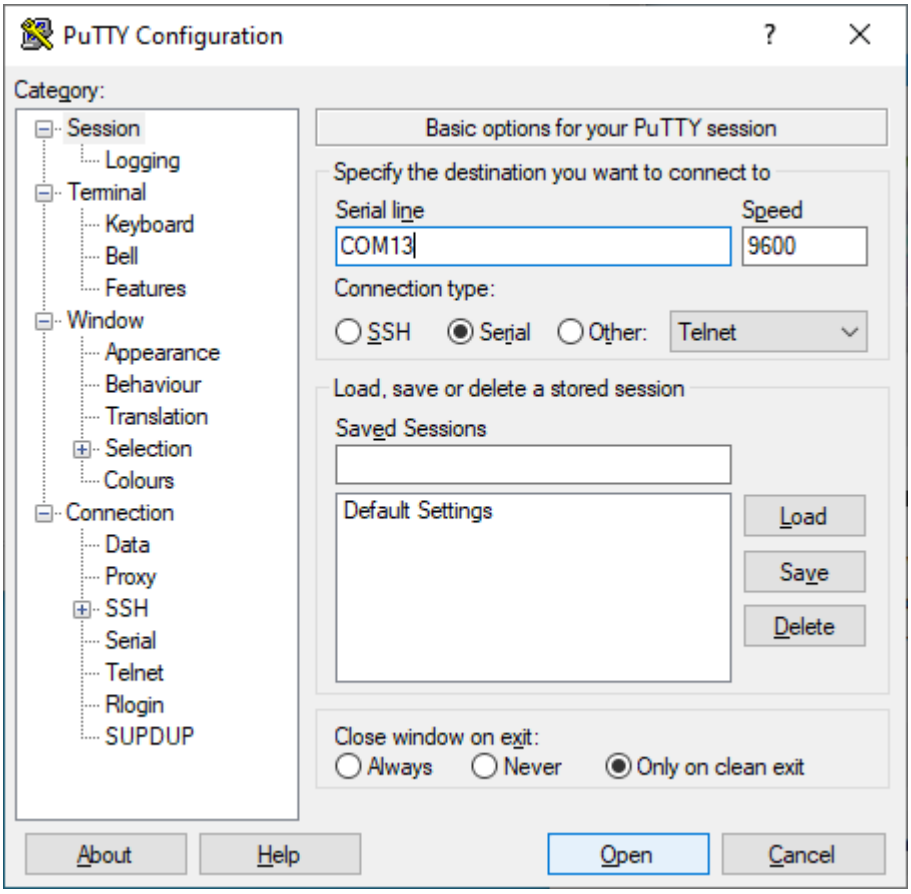
3. If the response is **OK,** then communication is present.

Activating the GNSS data output (NMEA-Data)

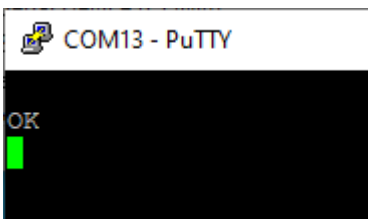
Depending on the current module configuration, it may be necessary to activate the GNSS data output manually via AT command.

Perform the following steps:

1. Open the **AT-Port** via **Putty.** (Port number can be different!)



2. In the window paste the command **AT+QGPSCFG="autogps",1** from the clipboard and confirm with **Return**. Since the characters are not displayed during manual input it is advisable to copy the prefabricated text to the **clipboard (Strg&C)** beforehand and paste it within the Putty window with a **right click (Strg&V)** followed by the Return key.



3. If the response ist **OK**, the command was successful.

Checking whether GNSS data can be received

To check whether GNSS data can be received, the open-source software **Putty** can be used, for example. Availability of the software: see previous section.

Perform the following steps:

1. Open the **NMEA-Port** via **Putty.** (Port number can be different!)
2. Check whether NMEA data are output.

Sample:

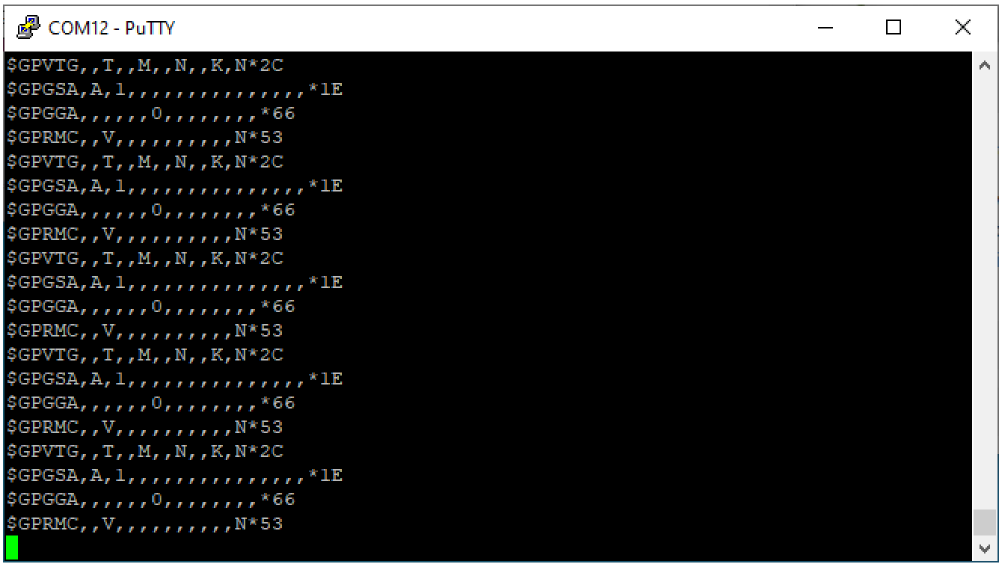


Fig. 11-14: QUECTEL EM05/EM06 - NMEA data

12. NFC Near Field Communication

12.1. Technology

NFC stands for "Near Field Communication". It uses RFID technology for wireless data exchange between two devices in close proximity. The range of NFC is short, only a few centimeters (4 cm or less), therefore the devices must be very close to each other for data transmission.

The NFC technology allows users to make secure transactions, exchange digital content, and connect electronic devices with a touch.

RFIDs allow a reader based on radio waves to read a passive electronic transponder (transmitter/receiver) for identification, authentication and tracking.

NFC uses frequency 13.56MHz specified by ISO/IEC 18000-3.

NFCIP-1 and NFCIP-2, ISO/IEC 14443, ISO/IEC 15693, MIFARE

12.2. Possible use cases

- Share digital content
- Connect compatible devices
- Access control: Login to the DLT-V73 (e.g. via an access card)
- Grant extended administrator rights via an access card
- Transmission of Bluetooth or WLAN authentication data to establish communication.
- Calling up web links if a URL in the corresponding format has been stored in the NFC chip.
- Can be used with active devices as an access key at terminals to content and for services

12.3. Pre-installed software

The Windows versions offered by Advantech (Win10IoTEnt / Win11IoTEnt) as well as the corresponding standard images include the following pre-installed NFC software:

- NxpNfcClientDriver (NXP Semiconductors)
- Proxy TAP (NXP Semiconductors)

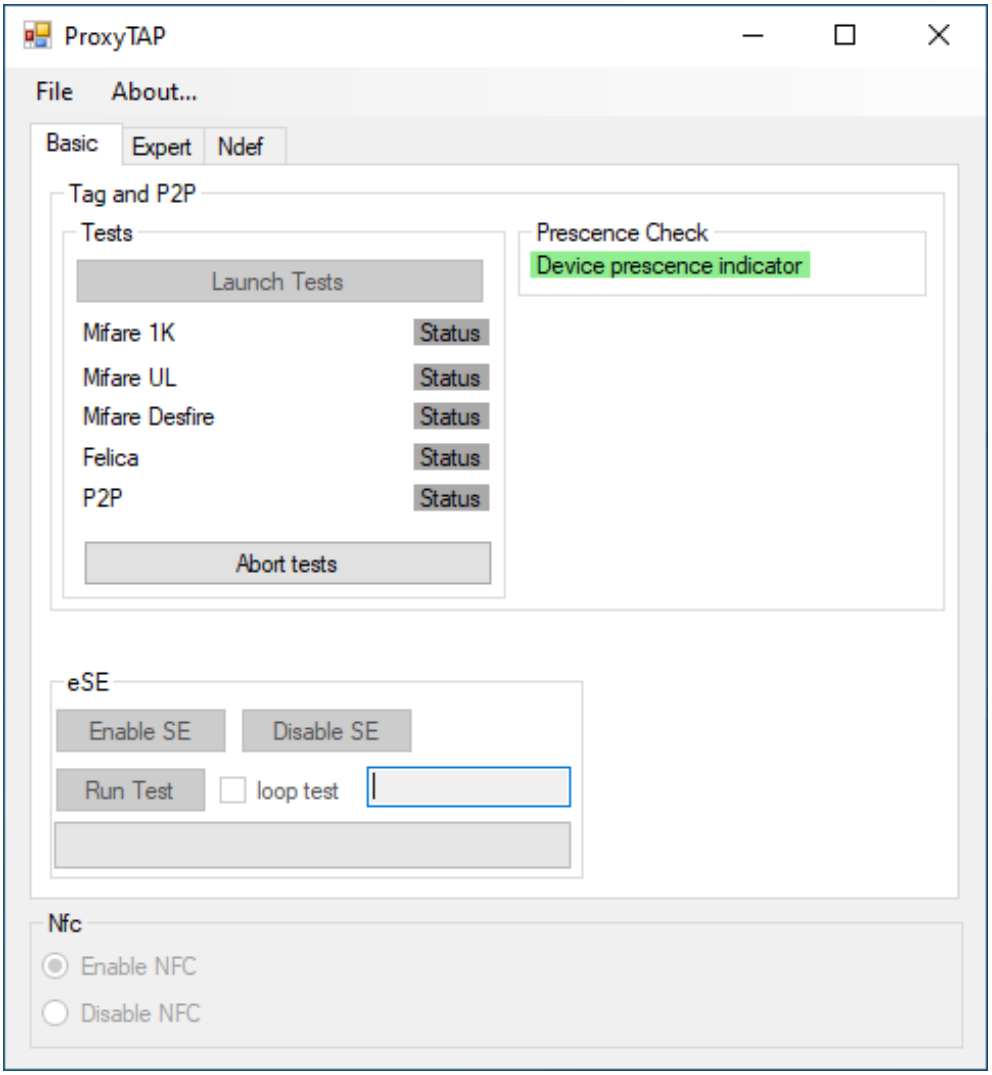


Fig. 12-1: NFC Proxy TAP application

For more information on how to connect to and use the Windows-based API interface to integrate NFC functionality into third-party applications, click here:

https://learn.microsoft.com/en-us/windows-hardware/drivers/nfc/

13. Mechanical Installation

13.1. Safety notes

WARNING

Risk of personal injury and property damage due to improper mechanical installation.

This mounting instruction is directed to skilled personnel. Only qualified skilled personnel may perform the mechanical installation work on the DLT-V73.

Observe manual section 2.5 Information on safe mounting.

NOTICE

Prevent system malfunction and property damage

The front display of the DLT-V73 is protected during transport by a transparent film. This film should remain on the front display during assembly to avoid damage to the front display surface.

Only remove the film after all of the installation work has been completed.

13.2. Overview: Recommended mounting sequence

Requirement: The vehicle/installation location must be prepared (e.g. connection to the ignition, correct voltage, etc.)

1. Find a suitable installation position for the DLT-V73.
2. Secure the device mounting (RAM or mounting bracket) to the targeted subject/vehicle.
3. Connect external accessories to the DLT-V73.
4. Install an easily accessible disconnecting device such as a switch close to the device.
5. Connect all cables (power supply, peripherals).
6. Close off all unused cable openings of the rubber seal using the accompanying blind plugs so that they are sealed.
7. Close the DLT-V73 with the cable cover.
8. Install the DLT-V73 on the device mounting.

13.2.1. Mounting the DLT-V73 at the deployment location

WARNING ***Risk of injury and damage due to improper deployment location.***

1. *Observe the intended use of the DLT-V73, e.g. not in potentially explosive areas, not in life-supporting facilities.*
2. *Ensure that the deployment location of the DLT-V73 complies with the permissible environmental conditions.*
3. *The installation height of the device shall not exceed 2 m.*
4. *When installing the DLT-V73, make sure that if the bracket breaks (e.g. because of a stress fracture) no one will be injured.*
5. *Alternatively, please put appropriate safety measures in place (e.g. install a security cable in addition to the mounting bracket).*
6. *To ensure that the limits set for exposure to radio waves are not exceeded: Install the DLT-V73 so that persons maintain a minimum distance of 20 to 50 cm to the antenna.*

Never install the system in a closed environment without cooling air!

NOTICE ***Prevent system malfunction and property damage***

Installation environment without cooling air can overheat / damage the DLT-V73.

The DLT-V73 employs a passive cooling concept whereby the waste heat generated inside the device is emitted from the surface of the housing. For this system to function properly, sufficient fresh air circulation is required. If there is no access to fresh cooling air, it may result in overheating and severe damage to the device.

Never install the system in a closed environment where the cooling air is unable to dissipate accumulated heat to the outside.

The maximum permissible ambient temperature for the entire system needs to be taken into account for the specific application area.

13.2.2. Electrically isolated DLT-V73 mounting

Due to a variety of technical properties of forklifts and forklift trucks, it can be necessary to electrically isolate DLT-V73 from the chassis of the vehicle to prevent malfunctions.

The necessity of this must be studied on a case-by-case basis, however, it is recommended for vehicles with potential-free chassis. For example, using rubber buffers ensures that the terminal has no electrically conducting connection to the vehicle chassis.

Measures:

1. If peripheral equipment (such as scanners, printers, scales or similar), which has its own power supply unit is used, you must ensure that the power supply units of these peripherals are galvanically separated from the supply of the vehicle.
2. Moreover, the peripheral equipment and its cabling must be attached electrically isolated.
3. If external antennas are being used, you must ensure that the antennas are isolated at the mounting point on the vehicle chassis.

DANGER

Risk of accident on vehicles due to unexpected vehicle emergency stop because of electro-conductive connection of the DLT-V73 to the vehicle chassis.

Some vehicles have a chassis that is connected to DC+. Therefore, the DLT-V73 chassis is also connected to DC+.
If the ground potential of a peripheral device is "DC-", short circuits can occur. This will inevitably lead to malfunctions or even a total system failure.

1. *Most electrically driven forklift vehicles have a floating chassis, connected to neither DC+ nor DC-. In the case of an error, either the plus or the minus potential could be connected to the chassis via low resistance paths. For this reason all connected peripherals must be attached isolated.*
2. *Make sure that the DLT-V73 power supply cable is attached as close to the battery as possible.*
3. *Do not connect the power supply cable to supply lines that are severely disturbed (e.g., motor supply) or that are otherwise burdened by consumers.*
   Connecting the DLT-V73 to large electrical loads, such as converters for the forklift motor may result in random restarts, malfunctions and/or irreparable damage to the device.

4. *If you want to connect devices fed by other power sources to the DLT-V73, such as certain Wedges, printers and so on, be sure to power up the peripheral devices at the same time or after the vehicle-mount. Otherwise, you may encounter start-up problems, malfunctions or even irreparable damage to the device.*

Read more about this in manual chapter *14.1.3 Observe the potential ratios*.

13.2.3. Attaching accessories to the DLT-V73

Only use mounting brackets, accessories and mounting materials that have been tested and approved for the respective DLT-V73.

All mounting brackets, accessories and mounting materials supplied by Advantech are only intended to be used for attachment of the Advantech Industrial Computers and the peripheral devices and may not be misused.

DANGER

Risk of accident during vehicle operation if the mounting of the DLT-V73 becomes loose and breaks while driving.

Ensure the following when attaching the mounting on the VESA mounting hole pattern:

1. *Special **mechanical knowledge** is required for correct mounting!*
2. *Use suitable mounting material.*
3. *Use suitable screws: Screws that are too long can penetrate the back of the DLT-V73 and cause irreparable damage. Screws that are too short do not provide secure mounting.*
4. *Use suitable washers.*
5. *Observe the maximum screw-in depth of the hole of the mounting hole pattern: The recommended screw-in depth of Dx1 always applies (screw diameter x 1).*
6. *If you ordered a bracket from Advantech, it includes the suitable screws and washers. Please use them.*

13.2.4. VESA mounting hole pattern

The rear side of the DLT-V73 has a VESA-compatible mounting hole pattern with 75 x 75 mm and 100 x 100 mm for a RAM Mount bracket or swivel mounting.

- Screw-in depth VESA mounting hole pattern:
  M6 x 6 mm for 75 x 75 mm
  M6 x 8 mm for 100 x 100 mm
- Suitable mounting material:
  Cylinder-head screws int.hex DIN912 M6
  Washers ISO 8738 (DIN 1440)-A6-A2

Fig. 13-1: VESA mounting hole pattern on the rear side of the DLT-V73

13.2.5. Attach the mounting bracket

The DLT-V73 housing has holes provided for attaching a mounting bracket.

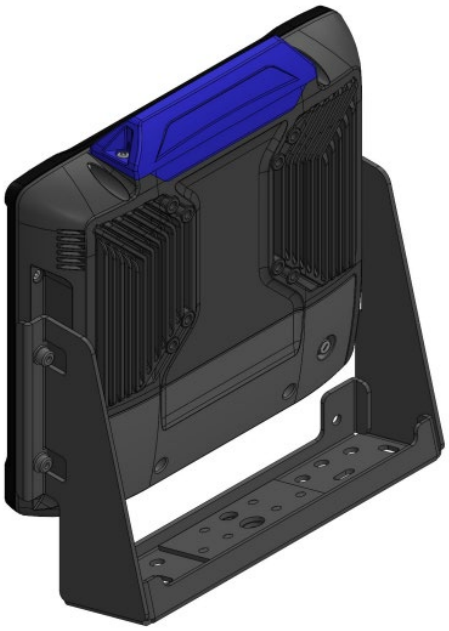


Fig. 13-2: DLT-V73 with mounting bracket

When a mounting bracket from a DLT-V72 is already present, an adapter is required to screw on the mounting bracket.

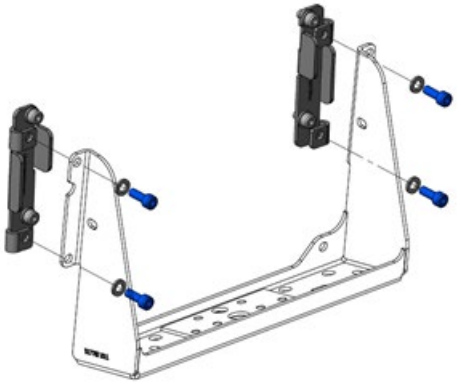


Fig. 13-3: Adapter with mounting bracket

1. Mount the adapter plate on the DLT-V73.

2. Mount the Mounting bracket on the adapter plate

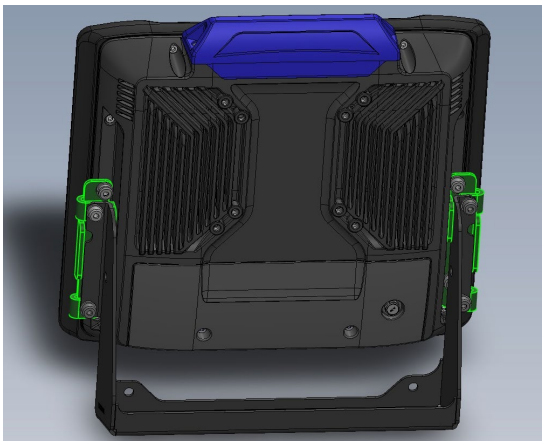


Fig. 13-4: Mounting bracket with adapter on DLT-V73

- Screw-in depth: M6 x 6 mm
  Suitable mounting material:
  cylinder head screws DIN912 M6
  Washers DIN 125 - A 6.4

13.2.6. Attach accessories

The housing of the DLT-V73 has holes provided for attaching an accessory.

NOTE *The Accessory catalog is available on our websites.*

Example:

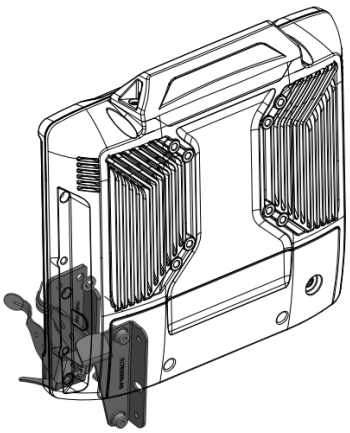


Fig. 13-5: Scanner mounting attachment

- Screw-in depth: M6 x 6 mm
- Suitable mounting material:
  Cylinder head screw DIN 912 M6
  Washer ISO 8738 - A6-A2

14. Electrical Installation

14.1. Safety notes

14.1.1. Disconnecting device and emergency-off

WARNING

Risk of personal injury and property damage due to improper electrical installation.

This mounting instruction is directed to skilled personnel. Only qualified skilled personnel may perform the electrical installation work on the DLT-V73.

1. *Observe section 2.6 Information on safe electrical installation in the Safety Chapter of this manual.*
2. *Comply with the appropriate national installation regulations for any and all cable routing.*
3. *Install a disconnecting device.*
   The DLT-V73 is not equipped with a disconnecting device that is accessible from the outside; it does not have a switch.
   To be able to quickly disconnect the DLT-V73 from the power supply in emergency situations, install an easily accessible disconnecting device close to the DLT-V73, e.g., a suitable load switch for low voltage.
4. *Ensure that the disconnecting device disconnects all power supply lines.*
5. *If the EMERGENCY-OFF switch of the vehicle does not switch off the DLT-V73, there is a risk of electrical shock. Install the DLT-V73 and the EMERGENCY-OFF switch so that the DLT-V73 also switches off when the EMERGENCY-OFF switch is operated.*
6. ***Important**: If a DLT-V73 with integrated UPS is installed in a vehicle, the EMERGENCY-OFF switch of the vehicle has no effect on the DLT-V73. This also applies to the peripherals supplied by the device.*

14.1.2. Power cables and fuses

WARNING ***Electric shock, fire due to incorrect cable routing or insufficient grounding.***

1. *Use only original Advantech power cables; these meet the specific requirements for low-temperature flexibility, UV resistance, oil resistance, etc.*
2. *Make sure that the power supply cables are run without kinks and are protected (securely protected against crushing and abrading).*
3. *The DLT-V73 may only be connected to a SELV circuit (Safety Extra Low Voltage). The SELV circuit is a secondary circuit that is designed and protected so that its voltages will not exceed a safe value both when operating correctly or if a single error occurs.*
4. *The DC+ connecting cable must be protected by a fuse (30 AT max.).*
5. *The ignition connecting cable must be protected by a fuse of the following type: 5x20 mm T 125 mA L / 250 V, for example, a Wickmann 195-125 mA / 250 V.*
6. *Observe correct voltage ranges.*
7. *Ensure that power supply cables are fused correctly.*
8. *Read the labeling on the cable and connect the power supply cable with the correct polarity.*
9. *Cut the supply cable to the minimum length. This avoids tangled cables and improves the quality of the power supply.*
10. *Connect the power supply cable to a suitable place. Ensure that the connecting cable has an adequate cross section and ampacity at the connection point.*

14.1.3. Observe the potential ratios

On the DLT-V73, the logic ground and the shield ground are firmly connected to each other. Logic ground is the ground (GND) used to supply the internal parts and components such as the display or CPU. All cable shields and the housing are connected to shield ground.

Read more about this in manual chapter *13.2.2 Electrically isolated DLT-V73 mounting*.

Some vehicles have a chassis that is connected to DC+. Therefore, the DLT-V73 chassis is also connected to DC+. If the ground potential of a peripheral device is “DC-“, short circuits can occur. This will inevitably lead to malfunctions or even a total system failure

1. Always attach ring tongue of the supply voltage cable to the provided ground bolt situated on the connector panel.
2. In most installation cases, connect the other end of the yellow-green power supply cable to the vehicle’s chassis.

   ATTENTION:
   In the following cases, the correct connection of the green-yellow cable must be clarified individually from case to case:
   - If you have a chassis connected to DC+.
   - If you have a floating chassis.
3. Connect the power supply cable of the DLT-V73 as directly as possible to the battery and not to power supply lines with a great deal of interference (e.g., the engine power supply) or otherwise affected by consumers.
4. Connecting the DLT-V73 to large electrical loads, such as converters for the forklift motor may result in random restarts, malfunctions and/or irreparable damage to the device.
5. If you want to connect devices fed by other power sources to the DLT-V73 (e.g., printers), be sure to power up the peripheral devices at the same time or after the DLT-V73; otherwise, you may encounter start-up problems, malfunctions or even irreparable damage to the device.

14.2. Preparations

1. Lay out ready all cables that are to be connected to the DLT-V73.
2. Select the appropriate slots on the connector panel of the DLT-V73.
3. Test in which order the cables best fit in the cable compartment.

Overview of connectors located on the connector panel under the cable cover:

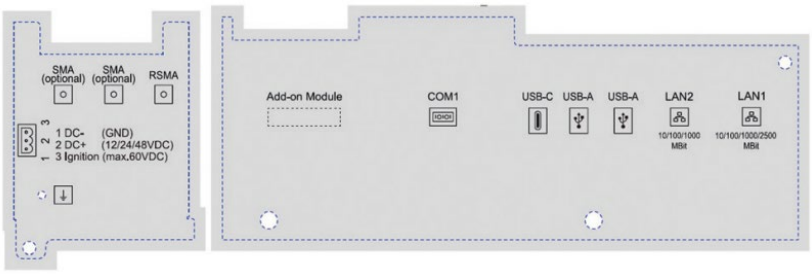


Fig. 14-1: Connectors on the connector panel under the cable cover

14.2.1. Material required

Cable sealing set: Screws and rubber seal

NOTE *Some parts in the scope of delivery are replacement parts.*

	11 x cylinder head screws DIN 912 M3x12 for fastening the cables to the strain relief rail
	9 x cable clips for fastening the cables to the strain relief rail

Rubber seal with blind plugs:

Fig. 14-2: DLT-V73 cable sealing set

Cable cover

Including 2 x special screws M4x12, neck 8 mm, thread length 4 mm, (latching in the holes of the cable cover)

Fig. 14-3: DLT-V73 cable cover with screws

Power supply cable

DC power supply cable with Phoenix contact connector

Tools

- Allen wrench, size 2.5mm, 3mm and 5mm
- Philips screwdriver, size 1
- Flat head screwdriver, size 0
- Torx screwdriver, Tx20
- Socket wrench, size 7mm
- Torque wrench

14.3. Procedure

14.3.1. Inserting the rubber seal in the cable compartment

1. Place the rubber seal in the sealing surface of the cable compartment (see figure).
2. Press the plugs of the rubber seal into the holes of the frame.

Fig. 14-4: Rubber seal inserted in the cable compartment

3. Please note the different inside diameters of the cable passages!

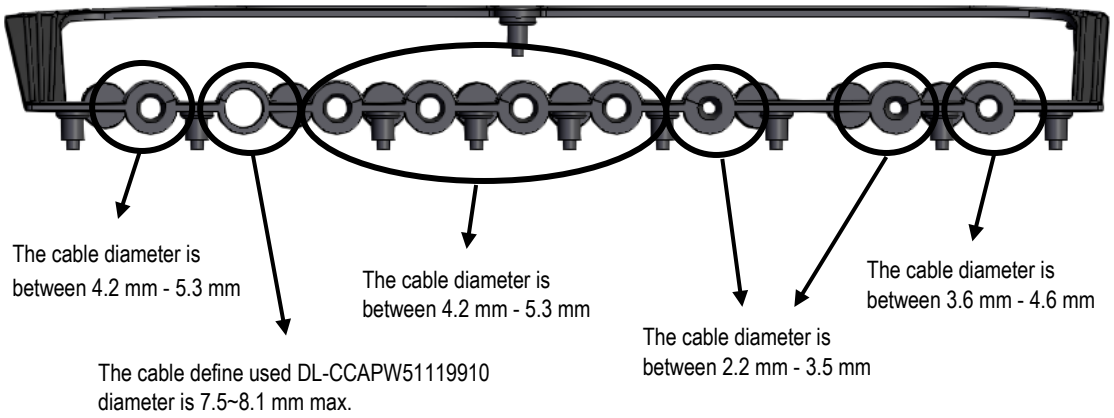


Fig. 14-5: Cable passages with inside diameter

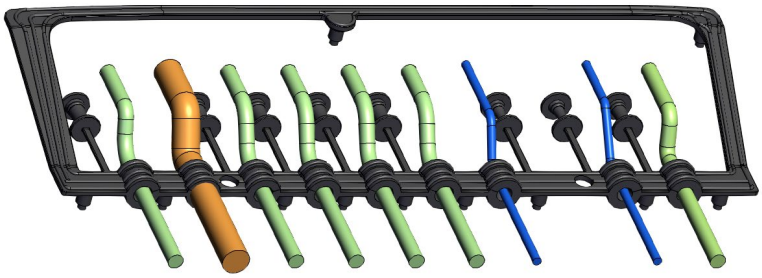


Fig. 14-6: Example of cable installation

14.3.2. Ensure a proper electrical connection

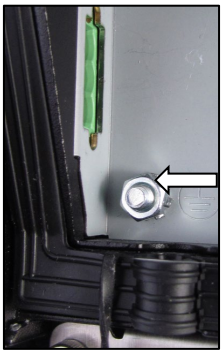


Fig. 14-7: Toothed washer with nut

Fig. 14-8: Toothed washer

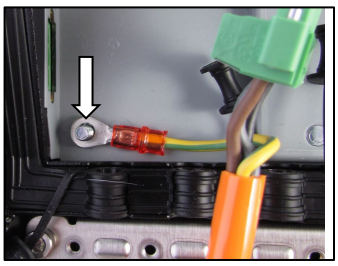


Fig. 14-9: Ring tongue on the ground bolt

1. Remove the nut from the ground bolt. The toothed washer remains on the ground bold.

Ground bolt, with the following components factory fitted:
- 1 x toothed washer
  D=8.5 d=4.2 t=0.5 ST Ni
- 1 x nut (W)
  B=6 M4*0.7 H=2.5 ST Zn

2. Plug the ring tongue on the power supply cable onto the ground bolt, the flat side of the ring tongue points towards the DLT-V73 connector panel. (**flat side facing down**)

3. Lastly, fit the nut and fasten it. **(Torque 1.0 Nm)**

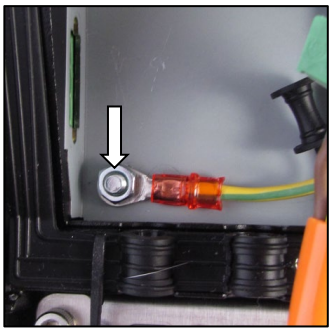


Fig. 14-10: Fasten nut

NOTICE: For a proper electrical connection, it is important to have the correct order of the components on the ground bolt (from inside to outside):

1. Toothed washer (internal)	
2.Ring tongue on the power supply cable (center)	
3.Nut (external)	

14.3.3. Plugging in and screwing on the power supply cable

Mounting screws

Fig. 14-11: Tighten power supply cable

1. Plug the DC power supply cable into the DC slot.
2. Tighten the mounting screws hand-tight.

14.3.4. Secure the power supply cable to the strain relief rail

Mounting screws

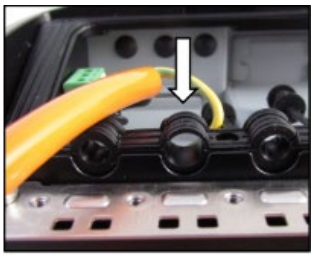


Fig. 14-12: Round cable passage

1. Open the round cable passage in the rubber seal

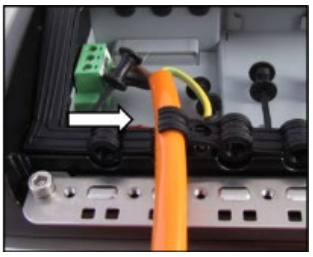


Fig. 14-13: Power supply cable

2. Insert the power supply cable into the 2nd cable passage from the left (extra-large passage for the power supply cable).

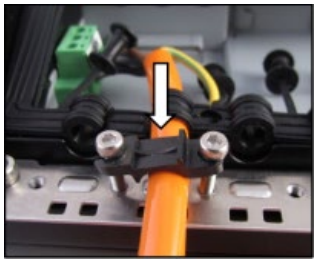


Fig. 14-14: Closed cable clip

3. Place one cable clip on the power supply cable.
4. Secure the cable clip to the strain relief rail using 2 mounting screws.
5. Tighten the mounting screws alternatingly.

NOTICE:

Tighten the mounting screws sufficiently but make sure not to pinch the cable. Otherwise, the cables may break or the insulation may be damaged.

Make sure that the power supply cables are run without kinks and are mechanically protected, securely protected against crushing and abrading.

14.3.5. Connecting the USB, Ethernet and COM cables

Procedure as described for the **power supply cable**:

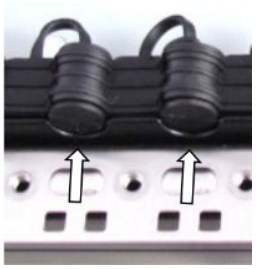
1. Connect the cable and screw on if necessary.
2. Open the round cable passage in the rubber seal.
3. Insert the cable with rubber seal into the cable passage.
4. Secure using cable clip and screws to the strain relief rail.

NOTICE ***Prevent system malfunction and property damage***

Observe the following when connecting/removing external devices on the DLT-V73.

1. *Only use accessories that have been tested and approved for the respective DLT-V73.*
2. *The DLT-V73 may not be connected to the power supply if external devices are being connected/removed (not applicable for USB devices). Otherwise, considerable damage could be caused to both the DLT-V73 and the peripheral devices.*
3. *Make sure that peripherals with their own power supply are either switched on at the same time as the DLT-V73 or after the start of the DLT-V73.*
4. *Otherwise, you must ensure that a backflow from the external device to the DLT-V73 cannot take place.*
5. *Only power up the DLT-V73 when all devices have been connected and the DLT-V73 has been closed correctly (remember the cable cover!). Otherwise, you may damage the DLT-V73.*

14.3.6. Close off unused cable openings



Close off all unused cable openings of the rubber seal using the accompanying blind plugs so that they are sealed.

Fig. 14-15: Close unused cable openings

14.3.7. Attach the cable cover

To prevent fluids or dust penetrating the DLT-V73 during ongoing operation, the cable compartment on the device must be sealed using the corresponding cable cover. The protection class is only ensured if the cable cover is properly installed.

1. Place the cable cover in the DLT-V73 housing slot and push up while holding cover down.
2. Screw the thin headless screws (latching) loosely into the holes of the cable cover.
3. Tighten screws alternatingly with a tightening torque of 1,5 Nm.
4. Make sure that the cables are not squeezed between the cover and the seal.

Example for a correctly attached cable cover:

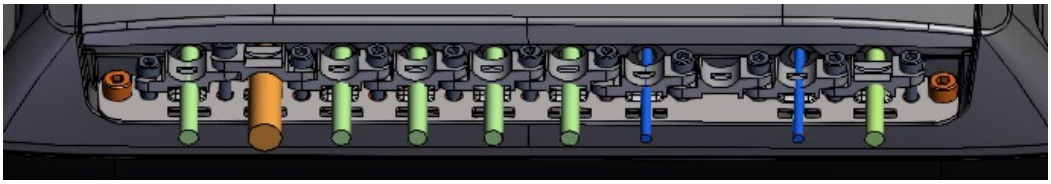


Fig. 14-16: Cable cover closed and screwed together

NOTICE ***Prevent system malfunction and property damage***

To prevent fluids or dust penetrating the DLT-V73 during ongoing operation, the cable compartment on the device must be sealed using the corresponding cable cover. The protection class is only ensured if the cable cover is properly installed.

14.4. Pressure compensation element

The DLT-V73 cable cover has a pressure compensation element.

NOTICE ***Prevent system malfunction and property damage***

Do not modify or remove the pressure compensation element; doing so would make the device leak and the IP protection would no longer be ensured.

Fig. 14-17: Pressure compensation element

15. Optional Equipment

15.1. Integrated UPS (optional)

The DLT-V73 is optionally available with an integrated UPS. The battery pack of the UPS is located in the battery pocket of the device under the antenna cap.

Fig. 15-1: Battery pocket with UPS DLT-V73

WARNING

Personal injury due to short-circuit, fire, chemical burns, toxic substances

DLT-V73 devices with integrated UPS contain battery packs. These can ignite if handled or stored improperly (risk of fire), cause chemical burns or release toxic substances.

1. *Use care when handling battery packs.*
2. *Please observe manual section 2.3 Battery pack safety.*

15.1.1. Battery pack specifications

Battery pack for Intel® Core™ i5 and Intel® Celeron®	
Bridging time	The integrated UPS can bridge an interruption of the main supply for typically 20 minutes. Requirement: The battery pack is fully charged.
Operating temperature	-10 to +30 °C
Charging time	Usually <2h from 0% → 100% maximal 3h (depends on temperature)
Charging temperature	-10 to 30 °C device is powered on 0 to 30 °C device is powered off
Storage temperature	-20 to +50 °C
Maximum output power	50 W
Battery voltage	7,2 V
Battery capacity	3250 mAh

15.1.2. Charging the battery pack

Connect the properly installed DLT-V73 to the main supply voltage.
The battery pack is charged automatically when the device is switched on (Charging when the device is switched off can also be set via “MDevice”).

WARNING

Electric shock when charging the battery pack

DLT-V73 devices with integrated UPS contain battery packs. These can ignite if handled or stored improperly (risk of fire), cause chemical burns or release toxic substances.

1. *The cable cover of the DLT-V73 must be screwed together properly.*
2. *The battery pocket and the antenna cap must be screwed together properly.*
3. *The device must be fully closed.*
4. *Do not connect damaged battery packs to the DLT-V73; do not charge.*
5. *Battery packs become warm while charging; this is normal. However, if they become excessively hot, immediately disconnect the DLT-V73 from the power source.*
6. *Do not continue to use the DLT-V73 if you notice an unusual level of heat or an unusual smell during charging.*
7. *Provide for sufficient ventilation of the DLT-V73 during charging.*

15.1.3. Replacing the battery pack (Taiwan Anjie Electronics antenna)

The battery pack of the DLT-V73 can be charged approx. 600 times. It may only be replaced by an original battery pack from Advantech.

WARNING

Personal injury due to short-circuit, fire, chemical burns, toxic substances. No third-party battery packs permitted.

1. *Use only original Advantech battery packs.*
2. *The battery packs must be authorized/approved for the DLT-V73.*
3. *Do not use battery packs from any other Advantech devices; they are not compatible.*
4. *If battery packs from other manufacturers are inserted in the DLT-V73, the warranty provided by Advantech for this device will be rendered void.*

Procedure for opening the battery cover

IMPORTANT: Switch off the DLT-V73 and disconnect from the supply voltage before replacing the battery pack.

1. Remove the antenna cap as specified.

Fig. 15-2: Remove antenna cap

For to replace the battery pack, the WLAN Diversity antenna has to be removed carefully.

NOTICE: The WLAN diversity antenna is attached to the wireless card inside the device with thin connecting cables. If a connecting cable is damaged or loosened, radio operation is no longer possible.

2. Unscrew the fastening screw of the WLAN diversity antenna on the left (1) and loosen it only slightly on the right (2).

Fig. 15-3: WLAN Diversity Antenna

3. Carefully fold the WLAN diversity antenna upwards to avoid stressing the cables.

Fig. 15-4: Opened WLAN Diversity Antenna

4. Loosen the battery cover by removing the fastening screws and removing the battery cover.

Fig. 15-5: Screws from the battery cover

Fig. 15-6: Opened battery compartment

Procedure for replacing the battery pack

1. Insert the battery pack, pay attention to the polarity. The contacts of the battery pack point towards the front.
2. Make sure that the removal tab of the battery pack points towards the back

Fig. 15-7: Inserted battery pack

3. Then mount the battery compartment cover **(torque 1.0 Nm**)
   Make sure that the removal tab of the battery pack is under the battery cover.

Fig. 15-8: Removal tab under the battery cover

4. Mount the WLAN diversity antenna (**torque 1.0 Nm**)
5. Fasten the antenna cap again as specified (**torque 1.0 Nm**)

15.1.4. Replacing the battery pack (Taoglas antenna)

The battery pack of the DLT-V73 can be charged approx. 600 times. It may only be replaced by an original battery pack from Advantech.

WARNING

Personal injury due to short-circuit, fire, chemical burns, toxic substances. No third-party battery packs permitted.

1. *Use only original Advantech battery packs.*
2. *The battery packs must be authorized/approved for the DLT-V73.*
3. *Do not use battery packs from any other Advantech devices; they are not compatible.*
4. *If battery packs from other manufacturers are inserted in the DLT-V73, the warranty provided by Advantech for this device will be rendered void.*

Procedure for opening the battery cover

IMPORTANT: Switch off the DLT-V73 and disconnect from the supply voltage before replacing the battery pack.

1. Remove the antenna cap as specified.

Fig. 15-9: Remove antenna cap

For to replace the battery pack, the WLAN Diversity antenna has to be removed carefully.

NOTICE: The WLAN diversity antenna is attached to the wireless card inside the device with thin connecting cables. If a connecting cable is damaged or loosened, radio operation is no longer possible.

2. Unscrew the fastening screws (1 and 2) of the Taoglas WLAN diversity antenna.

Fig. 15-10: Taoglas WLAN Diversity Antenna

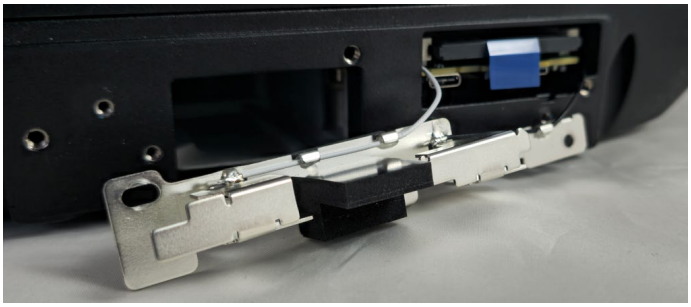


Fig. 15-11: Opened battery compartment

Procedure for replacing the battery pack

1. Insert the battery pack, pay attention to the polarity. The contacts of the battery pack point towards the front.
2. Make sure that the removal tab of the battery pack points towards the back.

Fig. 15-12: Inserted battery pack

3. Mount the WLAN diversity antenna (**torque 1.0 Nm**).
   Make sure that the removal tab of the battery pack is under the WLAN antenna.
4. Fasten the antenna cap again as specified (**torque 1.0 Nm**)

15.2. Screen defroster (optional)

Some DLT-V73 models are optionally available with a screen defroster (containing “D” in the model name, DLT-V7310 D and DLT-V7312 D).

Functional description

As soon as the internal temperature of the DLT-V73 device falls below 5 °C, the screen defroster is automatically activated and heats the front of the device. The front of the device thus thaws more quickly when leaving cold stores, for example.

In terms of the ambient temperature, this means:

- The defroster is typically active at an ambient temperature of approx. 0 °C. This depends on how quickly the ambient temperature changes or how quickly the DLT-V73 cools.
- Analogously, the screen defroster is typically deactivated again when the ambient temperature rises to 3 °C.

The temperatures are measured inside the device, so a certain delay must be considered.

Alternatively, the defroster function can also be switched on and off manually with FN and Touch ON/OFF.

The difference to the Automatic is that with the manual operation the defroster remains switched on up to approx. 23 °C ambient temperature.

The screen defroster has a heat output of approx. 30 Watts.

It does not work when the DLT-V73 is running on battery power.

It will switch off automatically if the internal device temperature is too high and cannot be switched on manually using the front keys.

Notes for parking vehicles with DLT-V73 devices with Screen-Defroster option:

ONLY necessary if **Charge Battery** and **Defroster functionality** are activated in "MDevice" at Power Settings. Check settings in MDevice.

1. Do not park or store vehicles on which DLT-V73 devices with a Screen-Defroster and an integrated UPS are installed in areas with ambient temperatures below 0 °C.
2. If vehicles on which DLT-V73 devices with a Screen-Defroster and an integrated UPS are installed are parked or stored for a significant length of time, disconnect the DLT-V73 from the vehicle battery.

15.3. USB recovery stick UEFI (optional)

The optional Advantech recovery stick allows images to be backed up and restored onto the DLT-V73 when necessary (backup & recovery).

NOTE

The "Advantech USB Recovery Stick UEFI Manual" is available on our websites.

15.4. Keyboards and keyboard mounts (optional)

Any USB keyboard can be connected to the DLT-V73.

To use the key assignment for these keyboards, a 3rd party software is necessary:

Keyboards (prehkeytec.com)

NOTE *The Accessory catalog is available on our websites.*

Advantech offers the following keyboards:

Fig. 15-13: Full keyboard

- Full keyboard SIK65
- Protection class IP66
- Keyboard layouts: US, German

Fig. 15-14: 21-key keypad

- Small keyboard SIK21
- 21 Keyboard
- Protection class IP66

Fig. 15-15: Keyboard mounting example

15.5. Scanner and scanner bracket (optional)

You can connect scanners to either the USB interface or the serial interface. If connected to COM1, the scanner can be powered through the interface with a voltage of 5V or 12V. The power supply can be set via MDevice.

Use only scanners that have been approved by Advantech.

Optional scanner brackets are available for the DLT-V73.

NOTE *The Accessory catalog is available on our websites.*

Example:

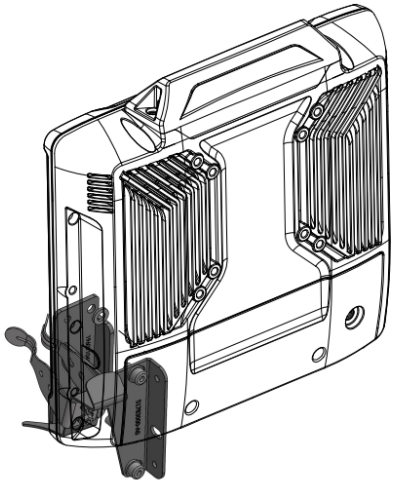


Fig. 15-16: Example scanner bracket

15.6. Touch stylus (optional)

Advantech offers some touch stylus pens (with associated mountings) for resistive and PCAP touchscreens.

Use only touch stylus that have been approved by Advantech.

NOTE *The Accessory catalog is available on our websites.*

Touch stylus with mounting for resistive touchscreen:

Touch stylus with mounting for PCAP touchscreen:

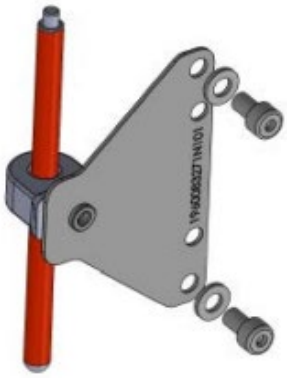


Fig. 15-17: Examples touch stylus

15.7. Protective film for touchscreen (optional)

An optional protective film is available for DLT-V73R (resistive) touchscreens. This film protects the touchscreen during extreme use.

NOTICE ***Prevent system malfunction and property damage***

Do not attach the protective film to damaged or worn-out touchscreens. Air bubbles can get trapped and cause malfunctions.

The ordered protective film is normally attached to the DLT-V73R touchscreen at the factory. If the film must be attached by the customer or replaced:

1. Turn off the DLT-V73.
2. Use a neutral glass cleaner without ammonia or isopropyl alcohol applied to a lint-free cloth.
3. Wipe off the touchscreen with it.
4. Then use distilled water to remove any residual glass cleaner.

   NOTICE: Prevent Property damage

   Never use any kind of chemical solvent, acidic or alkali solution.

   Do not use any abrasive glass cleaner or cloths that could scratch the touchscreen.

5. Make sure that the surface of the touchscreen is free of dust and other particles.
6. Position the protective film tight at one corner of the viewing window. The adhesive side of the film must be facing downwards!
7. Carefully press on the foil.
8. Then using a wiper (wooden wiper) to push out any air bubbles to the corners.

16. Repairs, Modifications

16.1. Authorized Advantech Service Centers

Only authorized Advantech Service Centers may perform the following:

- Open the device (front unit and base unit)
- Repairs
- Modifications
- Replace integrated modules, e.g., radio cards

The device operator may perform the following (only qualified skilled personnel):

- Opening/closing the antenna cap (e.g., for replacing CFast card and SIM card)
- Opening/closing the WLAN diversity antenna to replace the battery pack
- Opening/closing the cable cover

The legal warranty shall apply. It expires if the customer performs measures on the device that are only permitted to be performed by Advantech Service Centers.

Accessories and peripherals

Accessories and peripherals may only be installed or integrated if expressly approved by Advantech for the respective DLT-V73. If other parts are attached or installed and connected, claims for warranty and / or product liability will be lost.

THERE IS A RISK OF EXPLOSION IF THE BATTERY PACK IS SWAPPED OUT AND REPLACED WITH AN INCORRECT/NON-APPROVED BATTERY PACK.

17. Maintenance

17.1. Regular maintenance work

17.1.1. General

To avoid damage to the DLT-V73 and to ensure safe functioning:

1. Depending on the load and environmental conditions, check at least once per month, and more often if necessary, that all connected cables are secured and that the cable cover is tightly sealed (important for IP protection against dust, etc.).

17.1.2. Cleaning the device

There is a danger of electric shock if live parts of the DLT-V73 are touched during cleaning.

1. Switch off the DLT-V73 before cleaning.
2. Disconnect from the power supply.
3. Disconnect connected accessories.
4. Clean the touchscreen and housing with a damp cloth and a neutral glass-cleaning agent.
5. Do not use any chemicals such as benzene, thinner or acidic/alkaline solutions for cleaning.
6. Do not use any compressed air or high-pressure cleaning equipment.

17.1.3. Devices used in vehicles

DLT-V73 devices used in vehicles are subject to high loads due to vibration and shocks. To ensure the secure fastening of the device to the vehicle, the following points must be checked at least once a month, and where necessary more often, depending on the load and environmental conditions:

1. Check that the DLT-V73 is securely positioned in the corresponding mount (e.g. in the RAM mount or in the mounting bracket).
2. Check that all fastening elements are correctly secured (e.g. screws, etc.).
3. Check that the mounting with the DLT-V73 is securely fastened to the vehicle.

Risk of accident due to unstable attachment of DLT-V73

If the attachment of DLT-V73 becomes loose and breaks during moving, this can lead to severe accidents. Perform checks for the attachment as described above at regular intervals.

17.2. Replacing the battery pack

See manual section *15.1 Integrated UPS (optional)*.

17.3. Replacing the touchscreen protective film

See manual section *15.7 Protective film for touchscreen (optional)*.

18. Troubleshooting

Error	Possible cause(s)	Remedy
Battery pack run time is significantly shorter than specified.	The device may possibly not be in the temperature range, which is necessary for charging the battery pack.	Check the temperature specifications for the device and surroundings.
	Maximum number of charging cycles of the battery pack has been reached.	If temperature causes can be ruled out, the battery pack has possibly reached the maximum number of charging cycles. Replace the battery pack. Use only original battery pack from Advantech.
No UPS functionality although battery pack is plugged in.	Battery pack is discharged or deep discharged.	Charge the battery pack properly. Observe: If the battery pack is deep discharged, the charging time can increase by a multiple.
Nothing is shown on the display, Power LED does not light up.	There is no voltage present on the device.	Check the power switch, plug connection, power supply cable and fuse.
	Ignition signal missing.	Check ignition cable and signal
Nothing is shown on the display, Power LED active.	Backlight is switched off.	Press backlight key ("light bulb" symbol).
	Brightness to low	Increase display brightness with key
Nothing is shown on the display, Temp LED blinking.	Operating temperature limits exceeded/undershot.	Wait until the device has cooled down resp. warmed up.
Touchscreen reacts imprecisely. Device cannot be operated by touch input.	Touchscreen is switched off.	Press touchscreen on/off.
	Touch driver error (only for resistive touch)	Reinstall the touch driver or change settings
	Touchscreen is not calibrated correctly (only by resistive touch).	The touchscreen is already calibrated at the factory and therefore and does usually not need to be recalibrated.
Operating system does not start	External boot media lock	Remove all external storage (USB)
	Operating system damaged	Operating system or image must be reinstalled
No WLAN connection	Connection deactivated	Activate connection in the **Control Panel**
	AP access problem	List ACL and check access rights to AP

	Invalid network settings	Check WLAN, authorization parameters, network and protocol settings
	Signal strength too weak	Check signal strength and quality in software; if necessary, the network must be enlarged
The system loses settings after a restart	Write protection activated	Deactivate write protection or authorize changes in operating system
	Operating system damaged	Operating system or image must be reinstalled
No network connection	Connection deactivated	Activate connection in the Control Panel
	Invalid network settings	Check network and protocol settings
	Network problems	Check status LEDs on RJ45 connection socket, plug connection and cable

19. Guidelines and Certificates

19.1. Simplified EU declaration of conformity

The manufacturer:

Advantech Co., Ltd.

No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

The importer:

Advantech Europe B.V.

Science Park Eindhoven 5708, 5692ER, Son en Breugel, The Netherlands

Hereby, Advantech Co., Ltd. declares that the radio equipment type
DLT-V73XXXXXXXXXXXXXXX,
DLTV73XXXXXXXXXXXXXXX,
DLT-V7310PXXXXXXXXXXXXXXX,
DLT-V7312PXXXXXXXXXXXXXXX
DLT-V7310DXXXXXXXXXXXXXXX
DLT-V7312DXXXXXXXXXXXXXXX
(X=0-9, A-Z, a-z, Any character, “-” or blank)
is in compliance with Directive 2014/53/EU.

DocuSign Envelope ID: 5A86ADBA-A5FA-4B8F-8989-0C5E7E03D0AB

研華股份有限公司
Advantech Co., Ltd.
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Tel: +886-2-7732-3399
Fax:+886-2-2794-7334
www.advantech.com

EU Declaration of Conformity

CE

According to EC Directive

The following product (equipment/device):
Product type : **Computer**
Brand name: **Advantech**
Model number: **DLT-V73XXXXXXXXXXXXXXX (Where "X" may be any alphanumeric character, "-" or blank).**

is here with confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to
-Electromagnetic Compatibility Directive (2014/30/EU)
-RoHS Directive (2011/65/EU and (EU) 2015/863)
-Low Voltage Directive: 2006/95/EC & 2014/35/EU.
-Radio Equipment Directive: 2014/53/EU

The object of the declaration described above is in conformity with the following Directives, harmonized standards and/or other normative documents.

EMC:

- *ETSI EN 301 489-1 V2.2.3 (2019-11);*
- *ETSI EN 301 489-3 V2.3.1 (2022-11)*
- *ETSI EN 301 489-17 V3.2.4 (2020-09);*
- *ETSI EN 301 489-19 V2.2.1 (2019-04)*
- *ETSI EN 301 489-52 V1.2.1 (2021-11)*
- *EN 55032:2015+A1:2020*
- *EN 55035:2017+A11:2020*
- *EN IEC 61000-6-1:2019; EN IEC 61000-6-3:2021*

RED:

- *ETSI EN 301 908-1 V15.1.1(2021-09)*
- *ETSI EN 301 908-2 V13.1.1(2020-06)*
- *ETSI EN 301 908-13 V13.2.1(2022-02)*
- *ETSI EN 136 521-1 V17.4.0(2022-10)*
- *ETSI TS 134 121-1 V12.1.0 (2015-10)*
- *ETSI EN 300 328 V2.2.2(2019-07)*
- *ETSI EN 301 893 V2.1.1(2017-05)*
- *ETSI EN 300 440 V2.2.1(2018-07)*
- *ETSI EN 303 413 V1.2.1(2021-04)*
- *ETSI EN 303 687 V1.0.0(2022-04)*
- *ETSI EN 300 330V2.1.1 (2017-02)*

Safety:

- *EN IEC 62368-1:2020+A11:2020*
- *EN IEC 62311:2020*
- *EN 50364:2018*

RoHS:

- *EN IEC 63000*

This declaration of conformity is issued under the sole responsibility of the manufacturer:
Advantech Co. Ltd. (Company Name)
No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C. (Company Address)

DocuSign Envelope ID: 5A86ADBA-A5FA-4B8F-8989-0C5E7E03D0AB

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Advantech Co., Ltd.
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www.advantech.com

The importer responsible for making this declaration :
Advantech Europe B.V. (Company Name)
Science Park Eindhoven 5708, 5692ER, Son en Breugel, The Netherlands (Company Address)

Son en Breugel	13-Sep-2023	Jash Bansidhar
(location)	(date)	(Legal Signature)

Name: **Jash Bansidhar**
Title/Function: Managing Director Advantech Europe & Associate Vice President II, eAutomation

19.2. Low-voltage guidelines

DLT-V73 devices were tested and fulfill the IEC60950-1.

19.3. EMC guidelines

19.3.1. Shielded components

All components connected to the DLT-V73, as well as cable connections must also meet the legal EMC requirements for compliance with the EMC legislation. For this reason, screened bus, LAN cables and connectors must be used.

19.3.2. EMC EU

DLT-V73 devices fulfill the requirements of the EU Directive "2014/30/EU Electromagnetic Compatibility".

19.3.3. USA/CANADA: FCC Part 15 Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

CAUTION

Radio frequency exposure

In order to comply with the FCC requirements regarding radio frequency exposure from vehicle-mounted transmission devices:

The antenna has to be kept at least 20 cm to 50 cm away from people and domestic animals.

Any change or modification which is not expressly approved in the corresponding pages can lead to the withdrawal of the operating license for this device.

FCC ID

Please find the FCC ID on the device labels.

19.3.4. ICES Canada

Deutsch [German]:	DLT-V73 Industrie-PCs sind digitale Geräte der Klasse B und entsprechen der Kanadischen ICES-003 Norm.
English:	This Class B digital apparatus complies with Canadian ICES-003.
Français [French]:	Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

IC ID

Please find the IC ID on the device labels.

19.4. RoHS Directive EU

We hereby confirm the conformity of our products compliant with the RoHS Directive 2011/65/EU of the European Parliament and Council of June 8, 2011 on the restriction of the use of hazardous substances in electrical and electronic equipment.

19.5. RED (Radio Equipment Directive) 2014/53/EU

With regard to the RED (Radio Equipment Directive) 2014/53/EU the statements in the declaration of conformity for the DLT-V73 Industrial Computer apply.

[Bulgarian]:	С настоящото Intel® Corporation декларира, че този процесор Intel® Wi-Fi 6E AX210 е в съответствие със съществените изисквания и други приложими разпоредби на Директива 2014/53 / ЕС.
Česky [Czech]	Intel® Corporation tímto prohlašuje, že tento Intel® Wi-Fi 6E AX210 je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 2014/53/EU.
Dansk [Danish]	Undertegnede Intel® Corporation erklærer herved, at følgende udstyr Intel® Wi-Fi 6E AX210 overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU.
Deutsch [German]	Hiermit erklärt Intel® Corporation, dass sich das Gerät Intel® Wi-Fi 6E AX210 in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 2014/53/EU befindet.
Esti [Estonian]	Käesolevaga kinnitab Intel® Corporation seadme Intel® Wi-Fi 6E AX210 vastavust direktiivi 2014/53/EU põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, Intel® Corporation, declares that this Intel® Wi-Fi 6E AX210 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.
Español [Spanish]	Por medio de la presente Intel® Corporation declara que el Intel® Wi-Fi 6E AX210 cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2014/53/EU.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Intel® Corporation ΔΗΛΩΝΕΙ ΟΤΙ Intel® Wi-Fi 6E AX210 ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/ΕΕ.
Français [French]	Par la présente Intel® Corporation déclare que l'appareil Intel® Wi-Fi 6E AX210 est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/EU.
Italiano [Italian]	Con la presente Intel® Corporation dichiara che questo Intel® Wi-Fi 6E AX210 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/EU.
Latviski [Latvian]	Ar šo Intel® Corporation deklarē, ka Intel® Wi-Fi 6E AX210 atbilst Direktīvas 2014/53/EU būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo Intel® Corporation deklaruoja, kad šis Intel® Wi-Fi 6E AX210 atitinka esminius reikalavimus ir kitas 2014/53/EU Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart Intel® Corporation dat het toestel Intel® Wi-Fi 6E AX210 in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 2014/53/EU.
Malti [Maltese]	Hawnhekk, Intel® Corporation, jiddikjara li dan Intel® Wi-Fi 6E AX210 jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2014/53/EU.
Magyar [Hungarian]	Alulírott, Intel® Corporation nyilatkozom, hogy a Intel® Wi-Fi 6E AX210 megfelel a vonatkozó alapvető követelményeknek és az 2014/53/EU irányelv egyéb előírásainak.
Norsk [Norwegian]	Intel® Corporation erklærer herved at utstyret Intel® Wi-Fi 6E AX210 er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 2014/53/EU.
Polski [Polish]	Niniejszym, Intel® Corporation, oświadcza, że Intel® Wi-Fi 6E AX210 jest zgodne z zasadniczymi wymaganiami oraz innymi stosownymi postanowieniami Dyrektywy 2014/53/EU.
Português [Portuguese]	Intel® Corporation declara que este Intel® Wi-Fi 6E AX210 está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/EU.
Română [Romanian]:	Acest echipament Intel® Wi-Fi 6E AX210 este in conformitate cu cerintele esentiale si cu alte prevederi relevante ale Directivei 2014/53/EU.
Slovensko [Slovenian]	Šiuo Intel® Corporation izjavlja, da je ta Intel® Wi-Fi 6E AX210 v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.
Slovensky [Slovak]	Intel® Corporation týmto vyhlasuje, že Intel® Wi-Fi 6E AX210 spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EU.
Suomi [Finnish]	Intel® Corporation vakuuttaa täten että Intel® Wi-Fi 6E AX210 tyyppinen laite on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar Intel® Corporation att denna Intel® Wi-Fi 6E AX210 står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 2014/53/EU.
Íslenska [Icelandic]	Hér með lýsir Intel® Corporation yfir því að Intel® Wi-Fi 6E AX210 er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 2014/53/EU.

19.6. CE marking

The devices of the DLT-V73 series were tested and fulfill the CE conformity requirements and carry the CE mark on the rear side of the device.

19.7. CNROHS

CNROHS

Dear Customer,
Thanks for choosing an Advantech Co., Ltd. Product, to comply with China Electronic Industry Standard SJ/T11364 which require Marking for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products, herein report to you product's environmental protection as follows.
Please disregard this notice if the product is not to be sold / installed in China.

品号 **Model name**	**MTC6, XMT5, DLT-V83, DLT-V72 and DLT-V73 Series**					
部件名称 **Substance**	产品中有害物质或元素的名称及含量 **Name and concentration of hazardous substances contained in product**					
	铅 **(Pb)**	汞 **(Hg)**	镉 **(Cd)**	六价铬 **(Cr(VI))**	多溴联苯 **(PBB)**	多溴二苯醚 **(PBDE)**
外壳	O	O	O	O	O	O
LED 显示屏	O	O	O	O	O	O
主板	X	O	O	O	O	O
塑胶件	O	O	O	O	O	O
线材	O	O	O	O	O	O
电源	X	O	O	O	O	O

O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572标准规定的限量要求以下。
O: Represent the concentration for this hazardous substance in all homogeneous materials of the part Comply with the limit of the standard of GB/T 26572 . X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572标准规定的限量要求。 X: Represent the concentration for this hazardous substance at least in one homogeneous material of this part exceeds the limit of the standard of GB/T 26572. 企业说明:(对于超出标准的部分)

Enterprise statements: (for those exceeding the standard)
填写的内容:
Content:
产品标签上的环保使用期限(Environmental Protection Use Period, EPUP)标识表示在此期间内,在正常操作条件下,产品中所含有害物质或成分不会发生泄漏和变异。因而此类产品的使用不会导致 任何严重的环境污染、任何人身伤害或财产损失。同时,不应将此期间视为保修期或保证有效期。
The mark of EPUP(Environmental Protection Use Period) in product label means in this period, by the normal operation mode, the hazardous substances won't leak out and deviate, so the product use won't result in serious environmental pollution, human injury or property loss , meanwhile, please don't take this period as the warranty date. 标签上带有污染控制标志的产品是可以回收的,不应随意进行处理。
The products which attach with pollution control mark can be recycled, and should not be discarded at will.

CNROHS-A0

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20. Return shipment form

Return shipment form (please fill in once per return shipment):

Company	
Street	
Zip code, town	
Contact	
Phone number /E-Mail	

Type(s) of unit(s) returned:

Serial number(s) of the unit(s) returned:

[ ] The units have not been returned, as they are currently being used. However, the following parts are missing:

[ ] Unit was already damaged on delivery (please enclose a copy of the delivery note)

[ ] Delivery was incomplete

Missing parts:

[ ] The following error occurs when operating the unit:

[ ] Separate error report is enclosed

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21. List of figures