DLT-V72 Industrial Computer

Operating Instructions

V2.50 (EN) Preliminary

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

Operating Instructions completed on Feb 22, 2019.
Version 2.50 **Preliminary**

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1. Introduction

1.1. Information about the DLT-V72 manuals

	Contents	For target group	Availability
Safety instructions	Important information about protecting personnel and property	Skilled personnel	Printed, enclosed with the device
Quick Start and Installation Guide	First steps in commissioning, mechanical and electrical installation and mounting	Skilled personnel	
Operating Instructions	Complete operating instructions	Skilled personnel and trained users	PDF file at our websites
DLoG Config manual, Advantech Linux manual etc.	Description of software for the DLT-V72	Skilled personnel	
Mounting instructions for accessories	Description of mounting steps	Skilled personnel	Printed, enclosed with the respective accessories

- ⇨ Pay attention to these manuals because they help avoid hazards, reduce repair costs and downtimes, and increase the reliability and service life of the DLT-V72.
- ⇨ 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*.

1.1.1. Current manual versions at our website

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

www.advantech.com

www.advantech-service-iot.eu

1.1.2. ONE manual for all device models

These operating instructions apply to all models of the DLT-V72 series.

- DLT-V7210 P (PCT)
- DLT-V7210 R (Resistive Touch)
- DLT-V7210 D (Defroster)
- DLT-V7212 P (PCT)
- DLT-V7212 R (Resistive Touch)
- DLT-V7212 D (Defroster)
- DLT-V7210 K (Integrated Keyboard)
- DLT-V7210 KD (Integrated Keyboard and Defroster)
- DLT-V7212 P+ (P-CAP)

Differences with regard to operation, functionality, etc. are clearly indicated in the manual.

1.1.3. Warnings and notes in the operating instructions

Personal injury

Information with regard to personal injury is shown as follows (signal words for indicating risk level):

DANGER / WARNING / CAUTION

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

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

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

Property damage

Information about Property damage is shown as follows:

NOTICE: Property damage

Information about possible Property damage.

Tips for handling product and operating instructions

Tips for handling product and operating instructions are shown as follows:

TIP

Tips for using the product.

Note about additional information in operating instructions.

2. 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:

http://erma.advantech.com

3. Functional description

3.1. Intended use

The DLT-V72 Industrial Computers are data communication terminals for use in commercial environments (e.g. logistics, warehousing, manufacturing). Any other or additional use beyond this shall be deemed an improper use. The user/operator of the DLT-V72 is solely responsible for any resulting damage. This also applies to any unauthorized modifications made to the device.
Indented use includes the compliance with all safety instructions and the compliance with the approved environmental conditions and specifications for the device.

The DLT-V72 Industrial Computers:

- are not approved for use in EX zones (potential explosion hazard).
- are not approved for use on ships.
- are not approved for use on railed vehicles
- are not approved for use in life-support systems or critical safety systems where system malfunction can lead to the direct or indirect endangerment of human life.

Accessories

Only use accessories that have been tested and approved for the respective DLT-V72. Otherwise, any warranty for this device will be void.

Requirements for safe operation

The requirements are:

- 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-V72 Industrial Computers were designed and built according to modern technology and accepted safety regulations.
However, the operation of the DLT-V72 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/name plate

The name plate on the rear side of the DLT-V72 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, e.g. DLT-V7210, DLT-V7212, etc.
- Serial number
- FCC ID (Radio)
- Barcode for internal use only

4. Unpacking, transporting, storing

4.1. Unpacking

- ⇨ Open the packaging carefully to prevent damaging the device inside.
- ⇨ Save the packaging material (for possible forwarding transports or returns of the DLT-V72).
- ⇨ Check the shipment for completeness and any possible damage.

- ⇨ **Always keep the supplied manuals and documents.**

4.2. Transport

WARNING

Risk of injury due to weight and sharp-edged parts.

The DLT-V72 can fall down and cause injuries due to its weight.
The strain relief rail can have sharp edges and cause cutting injuries.

- ⇨ Always hold the DLT-V72 by the housing with both hands.
- ⇨ Never use the antenna as a handle. It can break due to the weight involved.
- ⇨ Do not hold the DLT-V72 by the strain relief rail.
- ⇨ Use the assistance of a second person for installation work.

4.3. Storage

4.3.1. DLT-V72 without UPS

- ⇨ Observe the permissible storage temperature range in the manual, section *5.2 Environmental conditions*.

4.3.2. DLT-V72 with UPS (includes lithium-ion battery pack)

- ⇨ **Observe the permissible storage temperature range in the manual, section *15.1.1 Battery pack specifications*.**

- ⇨ **Observe the intended use of the DLT-V72, e.g.: no use in EX zone (potentially explosive), no use in life-supporting systems or security-critical facilities.**
  For details, see manual, section *3.1 Intended use* .

WARNING

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

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

- ⇨ Use care when handling lithium-ion battery packs.
- ⇨ Do not damage lithium-ion battery packs; do not drill through and do not crush or drop.
- ⇨ Store lithium-ion battery packs separately from acids and other materials.
- ⇨ Store the DLT-V72 and accessories in a cool and dry location and comply with the specified storage temperature and air humidity.
- ⇨ Provide for sufficient ventilation of the storage location.
- ⇨ Do not allow water or other liquids to come into contact with the device (exercise particular caution with corrosive liquids).
- ⇨ Do not store the device near sources of heat or fire, open flames or heaters.
- ⇨ Do not allow it to come into contact with fire.
- ⇨ Have suitable fire extinguishers ready (foam or powder) in accordance with safety regulations.

Prevent deep discharge

NOTICE: Physical damage

Deep discharge of the battery pack due to incorrect storage.

Storing the lithium-ion batteries incorrectly will cause them to discharge completely (deep discharge) and thus damage them irreparably.

- ⇨ Store the DLT-V72 with lithium-ion battery packs a maximum of 6 (six) months without charging it.
- ⇨ The lithium-ion battery pack is charged automatically when the DLT-V72 is connected to the voltage supply.
- ⇨ It is not permitted to charge the DLT-V72 lithium-ion battery pack with external chargers.

4.3.3. Protecting touchscreens during storage

NOTICE: Physical damage

Damage to the touchscreen due to incorrect storage.

- ⇨ Protect touchscreens from sharp edges, impacts, and heavy objects.
- ⇨ If stacking, do not stack higher than four devices.
- ⇨ 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.
- ⇨ Use protective material (non-flammable!) between the devices as a precaution.

5. Technical data – Device

5.1. General

CPU Chipset Cache	Intel® ATOM™ E3845 Quad Core 1.91 GHz Dual channel 1333 MHz memory bus speed 2 MB L2 cache, 22 nm
RAM	4 GB RAM DDR3L Technology
BIOS	AMI Aptio UEFI; ACPI 5.0 compliant
Real-time clock	Real-time clock with a power reserve of up to 5 years
CFast	4 GB and more CFast memory card

Weight, material	
DLT-V7210 P DLT-V7210 R DLT-V7210 D	Approx. 3.6 kg
DLT-V7212 P DLT-V7212 R DLT-V7212 D	Approx. 4.6 kg
DLT-V7210 K DLT-V7210 KD	Approx. 3.7 kg
DLT-V7212 P+	Approx. 3.7 kg
Battery pack	Approx. 0.15 kg
Material	Rugged aluminum-cast housing, ESD safe

Display	
DLT-V7210	10.4" XGA color TFT with 1024 x 768 resolution and 400 cd/m² brightness
DLT-V7212	12.1" XGA color TFT with 1024 x 768 resolution and 500 cd/m² brightness
DLT-V7210 K DLT-V7210 KD	10.1" widescreen WXGA color TFT display with 1280 x 800 resolution and 500 cd/m² brightness
DLT-V7212 P+	12.1" XGA color TFT with 1024 x 768 resolution and 600 cd/m² brightness

The LCD display of the DLT-V72 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.

ATTENTION: Physical damage

Protect the display of the DLT-V72 from the memory effect.

The display of the DLT-V72 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:

⇨ Use a screensaver.

⇨ 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	Film-Film-Glass (FFG) Fully laminated front
Surface	Hardness JIS-K-5400: 2H/3H at 750 g Chemically hardened glass
Resistance	Shock resistance IK08
Mechanical resistance	Tapping: > 1 million times with rubber test pen Swiping: > 100,000 times with polydactyl pen
Chemical resistance	Alcohols, Dilute Acids, Dilute Alkalis, Esters, Hydrocarbons, Ketones, Household Cleaning agents (according to DIN 42 115)

Projected-capacitive touchscreen (PCT)	
Type	Projected-capacitive touchscreen
Construction	Glass film
Surface	Hardness JIS-K-5400: > 10 H at 750 g Chemical AR coated glass: DLT-V7210P and DLT-V7212P gloss value 85 at 60° DLT-V7210K gloss value 70 at 60° (according to ISO 2813, 7668; ASTM D 523, D 2457; DIN 67539)
Resistance	Shock resistance IK08
Mechanical properties	Thermally pre-stressed, acid-frosted float glass
Chemical resistance	Alcohols, Dilute Acids, Dilute Alkalis, Esters, Hydrocarbons, Ketones, Household Cleaning agents (according to DIN 42 115)

Graphic, network controller	
VGA controller	Intel® HD Graphics DX11 OpenGL 3.2 Full HW Acceleration for decode/encode of MPEG2 and H.264 Shared memory architecture Up to 24 bit color depth, depending on which LCD is used
Network controller	Intel® I210 Gigabit Ethernet 10/100/1000 MB/s
Network connection	RJ45 connector Integrated carrier Two integrated status LEDs

Internal speaker, sound

The DLT-V72 is equipped with an internal speaker as standard (2 W).
The system messages from the industrial PC are output via this speaker.
The internal speaker is configured in the audio settings for the operating system in question.

5.2. Environmental conditions

5.2.1. DLT-V72 without integrated UPS

Operating temperature	-30 to +50 °C Specification according to EN 60068-2-1/2
Storage temperature	-30 to +65 °C Specification according to EN 60068-2-1/2
Relative humidity	10% to 90% at 40 °C relative humidity Noncondensing Specification according to EN 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-V7210 and DLT-V7212 IP65 for DLT-V7210K

5.2.2. DLT-V72 with integrated UPS (optional)

The environmental conditions are described in the following chapter:

15.1 Integrated UPS (optional)

5.3. Device dimensions

5.3.1. DLT-V7210 P, R, D

Dimensions without add-ons (in mm)

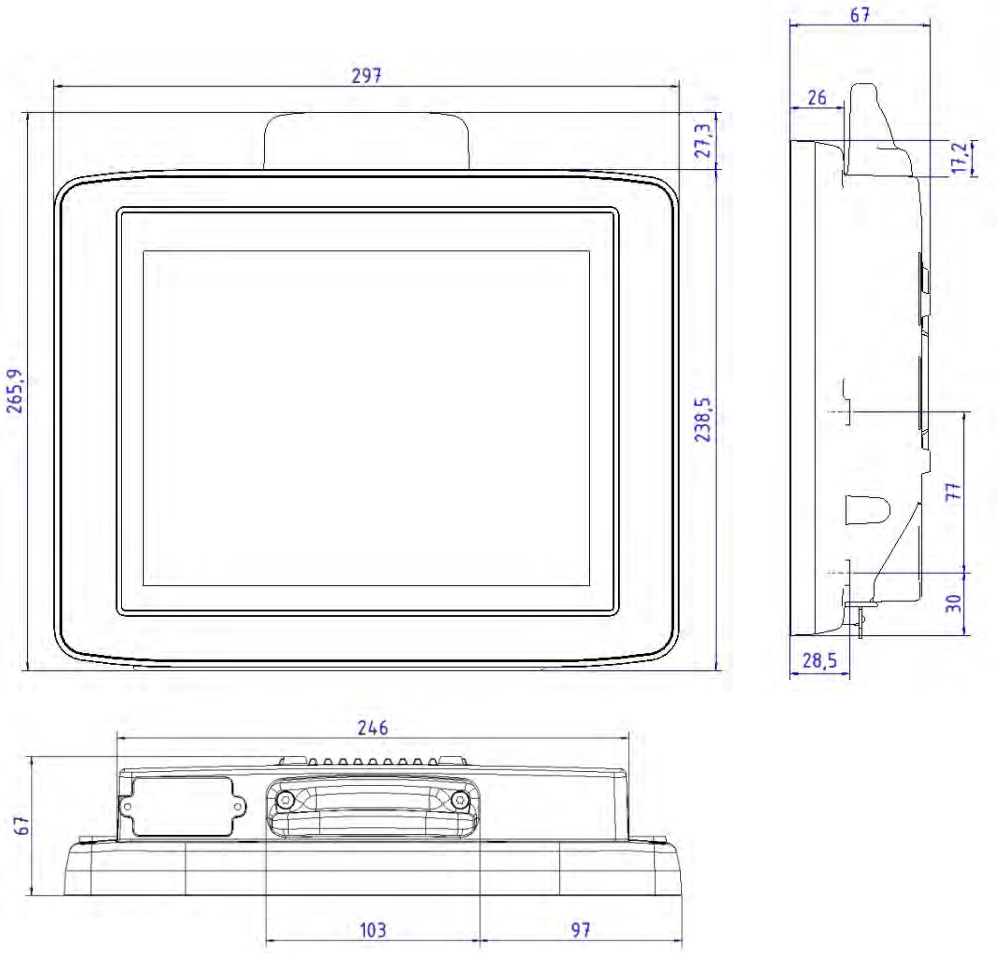


Fig. 5.1: Dimensions DLT-V7210 P, R, D

5.3.2. DLT-V7212 P, R, D

Dimensions without add-ons (in mm)

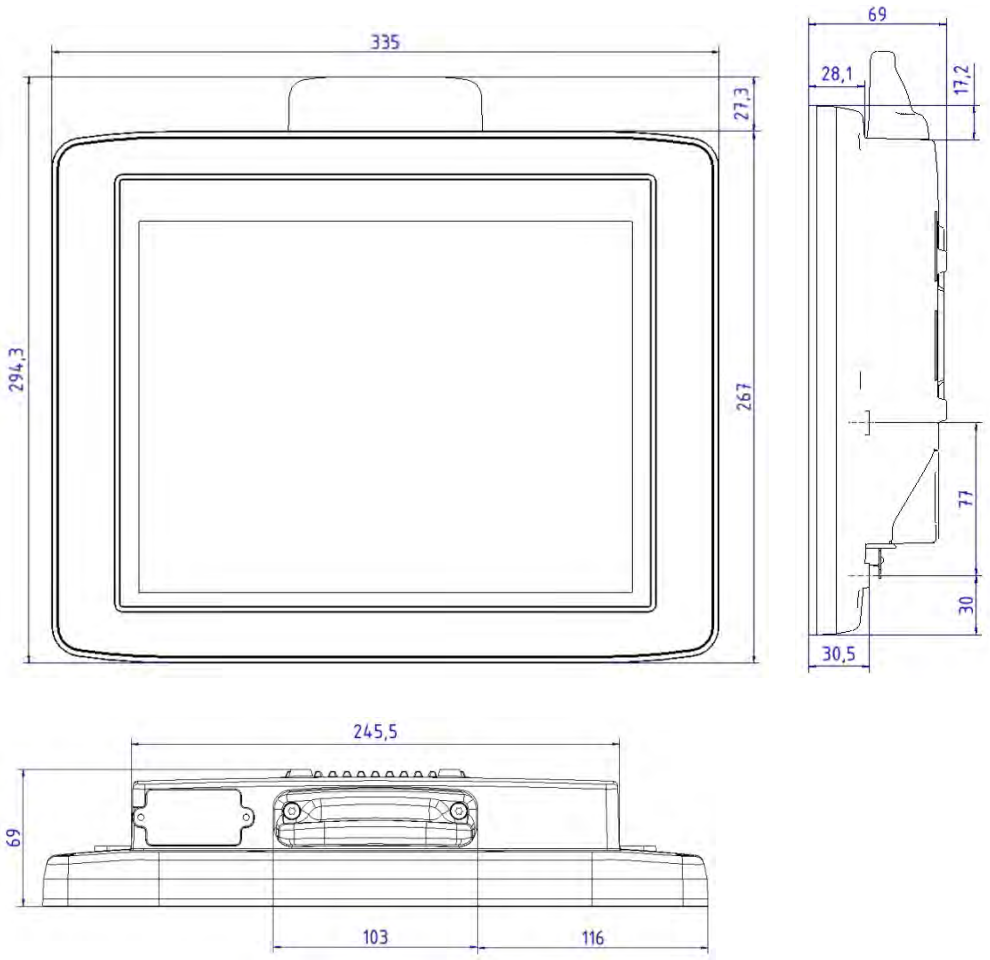


Fig. 5.2: Dimensions DLT-V7212 P, R, D

5.3.3. DLT-V7210 K, KD

Dimensions without add-ons (in mm)

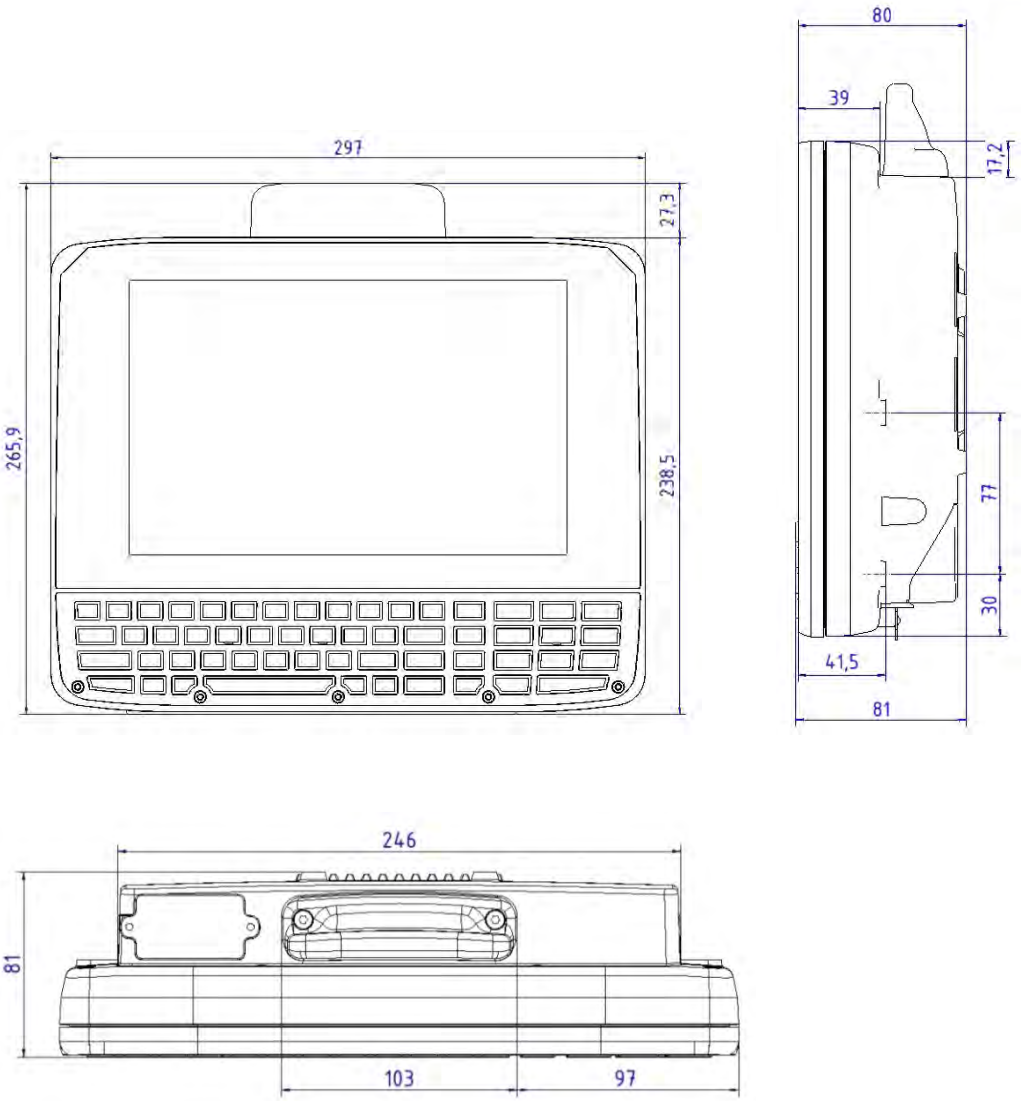


Fig. 5.3: Dimensions DLT-V7210 K, KD

5.3.4. DLT-V7212 P+

Dimensions without add-ons (in mm)

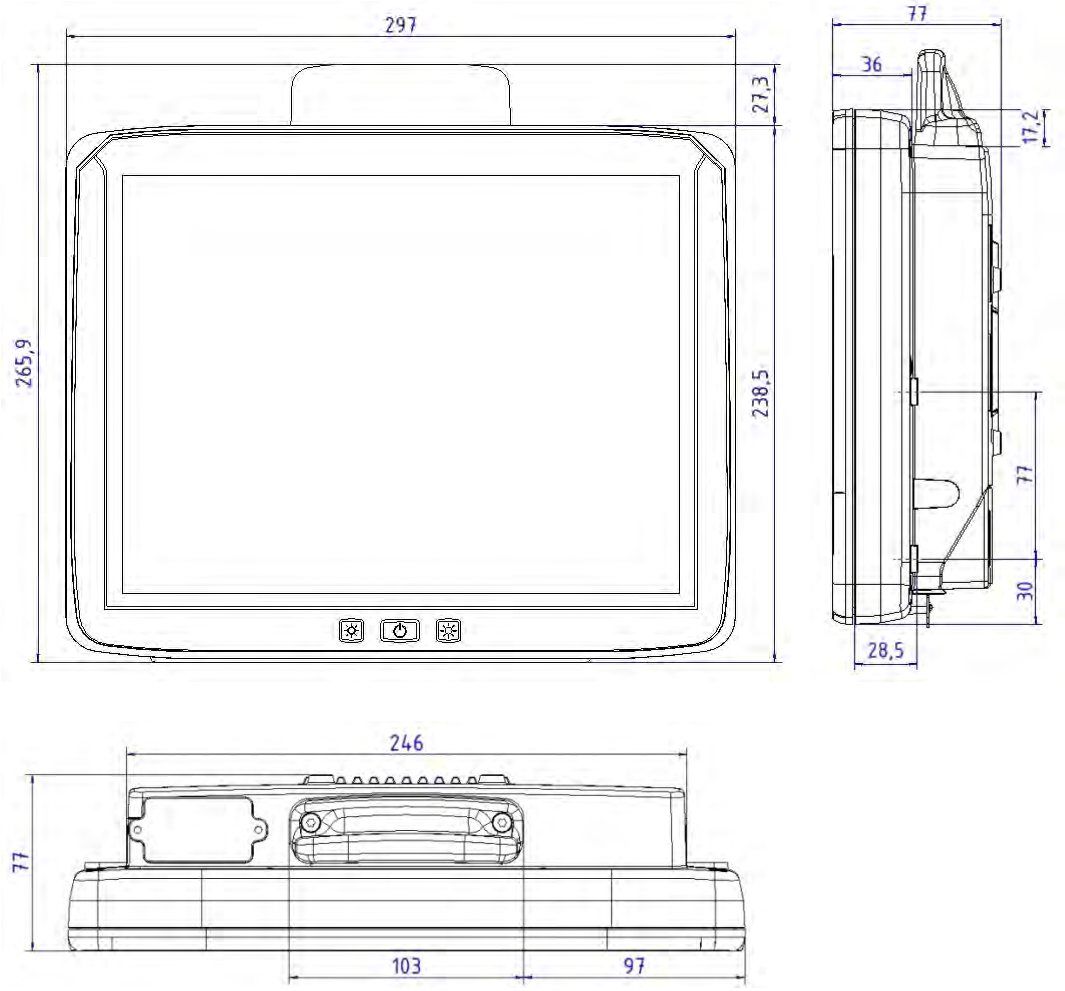


Fig. 5.4: Dimensions DLT-V7212 P+

5.4. Position of VESA drill holes

The back of the DLT-V72 has a VESA-compatible 75 x 75 mm mounting hole pattern. It is used to attach VESA-compatible mountings to mount the DLT-V72 at the deployment location.

ATTENTION: Physical damage

Only use mountings and mounting materials that have been tested and approved for the respective DLT-V72. Otherwise, any warranty for this device will be void.

5.4.1. DLT-V7210 P, R, D

Dimensions without add-ons (in mm):

Depth of thread: M6 x 6mm.

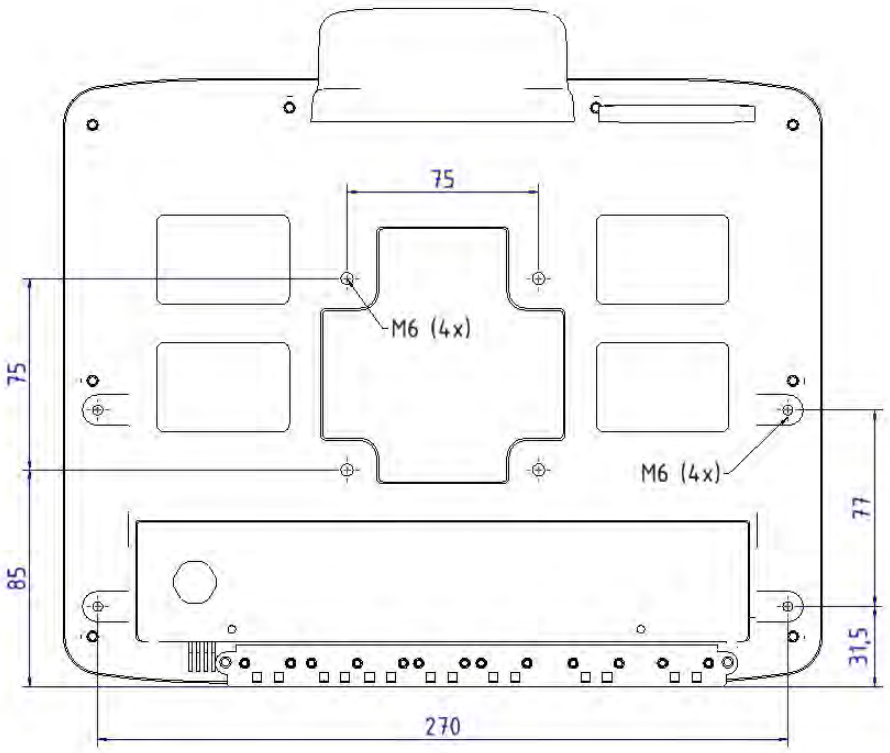


Fig. 5.5: Position VESA drill holes DLT-V7210 P, R, D

5.4.2. DLT-V7212 P, R, D

Dimensions without add-ons (in mm):

Depth of thread: M6 x 6mm.

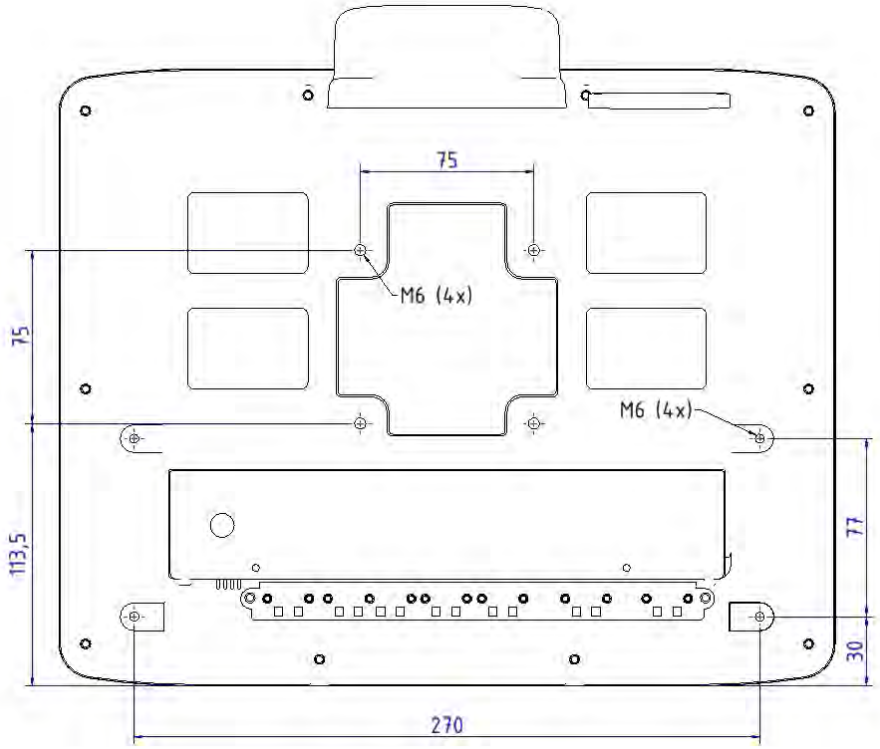


Fig. 5.6: Position VESA drill holes DLT-V7212 P, R, D

5.4.3. DLT-V7210 K, KD

Dimensions without add-ons (in mm):

Depth of thread: M6 x 6mm.

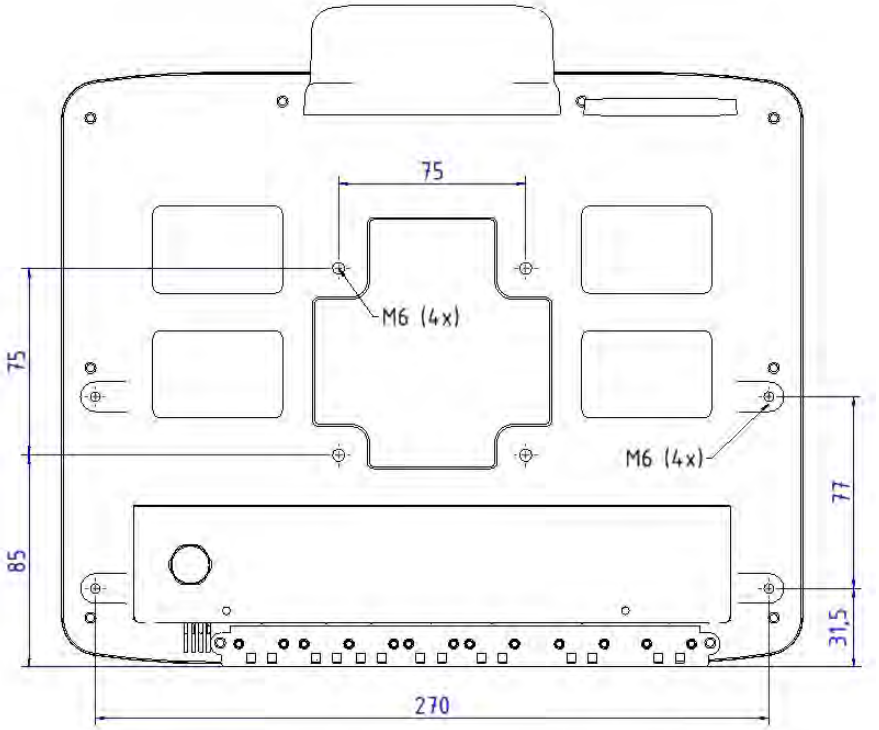


Fig. 5.7: Position VESA drill holes DLT-V7210 K, KD

5.4.4. DLT-V7212 P+

Dimensions without add-ons (in mm):

Depth of thread: M6 x 6mm.

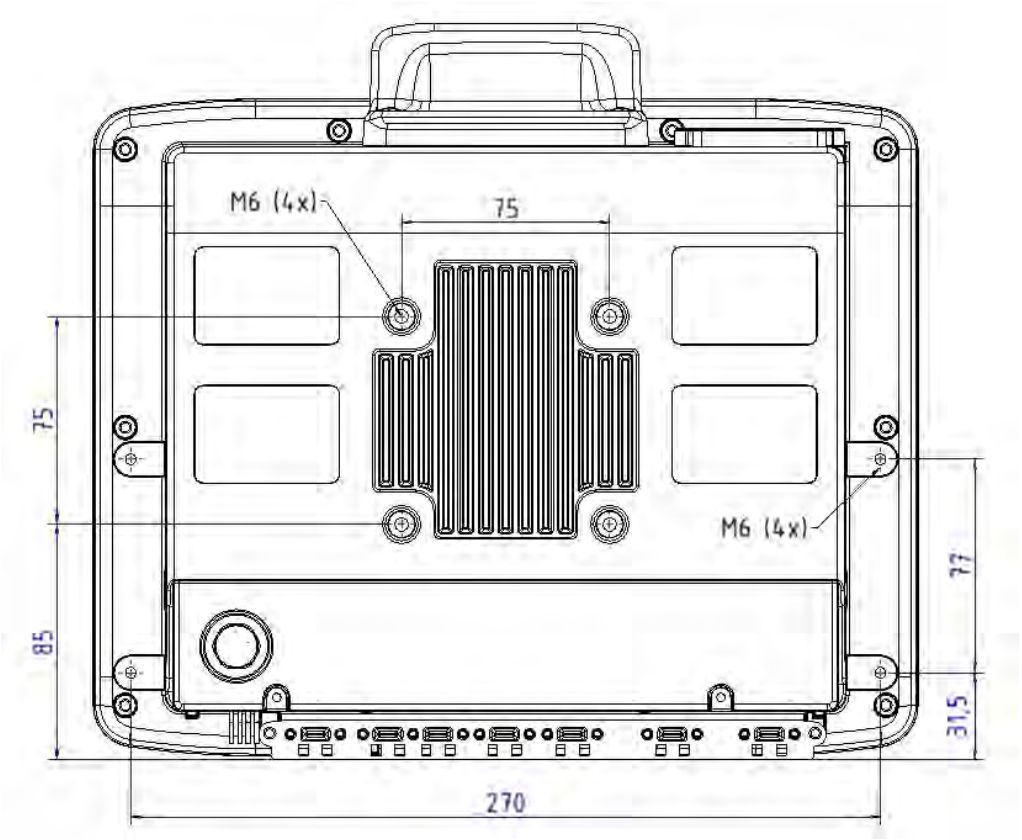


Fig. 5.8: Position VESA drill holes DLT-V7212 P+

6. Technical data – Radio modules (all optional)

NOTICE: Property damage

DLT-V72 may only be operated with the radio modules described in the following section.

6.1. Identification of the equipment variants

The DLT-V72 offers numerous radio equipment variants for Wi-Fi, WWAN, GNSS and Bluetooth. To identify the variant installed in your device, proceed as follows:

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

The radio equipment variants for Wi-Fi, WWAN, GNSS and Bluetooth are available as options and are not included in the standard scope of delivery of the DLT-V72.

6.2. Radio cards (optional)

WARNING

Only the manufacturer and its authorized service centers may install/remove radio cards.

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.

6.2.1. Available radio cards for Wi-Fi

.

SPARKLAN WPEQ-261ACN(BT)	
Card type	Wi-Fi PCIe Half-Mini Card
Technology	Wi-Fi IEEE802.11 a/b/g/n/ac and Bluetooth (both supported via a single antenna)
FCCID	RYK-261ACNBT
IC ID	6158A-261ACBT
Band 1: WLAN 2.4 GHz	
Frequency range	2400 to 2483.5 MHz
Frequency band ETSI Europe	2.4 GHz to 2.4835 GHz
Channels available	1 to 13 (WIFI), 0 to 78 (BT)
Supported standards	Wi-Fi IEEE802.11 a/b/g/n/ac and Bluetooth (both supported via a single antenna)
Maximum TX power	20 dBm (WIFI), 10 dBm (BT)
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
Supported standards	Wi-Fi IEEE802.11 a/b/g/n/ac
Maximum TX power	22 dBm

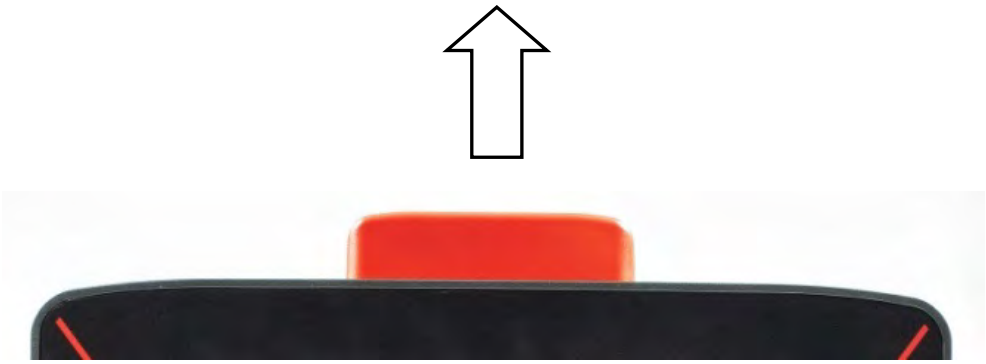
6.2.2. Available Radio cards for WWAN

USA: QUECTEL EC25A **Europe: QUECTEL EC25E**	
Card type	WWAN PCIe Full-Mini Card
Technology	WWAN 2G, 3G, 4G cellular bands and GNSS
FCCID	FCC ID: XMR201605EC25A (valid for the EC25-A variant)
Maximum transmitting power	Class 3 (23dBm±2dB) for LTE FDD Class 3 (23dBm±2dB) for LTE TDD Class 3 (24dBm+1/-3dB) for TD-SCDMA Class 3 (24dBm+1/-3dB) for WCDMA Class E2 (27dBm±3dB) for EDGE 850/900MHz Class E2 (26dBm+3/-4dB) for EDGE 1800/1900MHz Class 4 (33dBm±2dB) for GSM 850/900MHz Class 1 (30dBm±2dB) for GSM 1800/1900MHz

6.3. Antennas (all optional)

6.3.1. Wi-Fi antenna IEEE 802.11 a/b/g/n/ac

Detail view: Antenna module (visible with open antenna)



Technical data	
Application	Wi-Fi a/b/g/n/ac Dual Band with MRC Bluetooth (integrated via Radio card)
Wi-Fi frequency range	Band 1: 2400 to 2483.5 MHz Band 2: 5150 to 5850 MHz
Bluetooth features	See section *6.4.1 Bluetooth*
Number of antennas	2
Available color	Red
Type	PIFA antenna
Antenna gain	Max. 3.44 dBi (Band 1) , 2.85 dBi (Band 2)
Impedance	50 Ω
Polarization	Vertical/horizontal
Maximum transmitting power	100 mW / 20 dBm
Compatible Radio card:	SPARKLAN WPEQ-261ACN(BT) (see section *6.2.1 Available* radio cards)

6.3.2. Wi-Fi, WWAN, LTE 4G antenna (Multiband)

Detail view: Antenna module (visible with open antenna open)

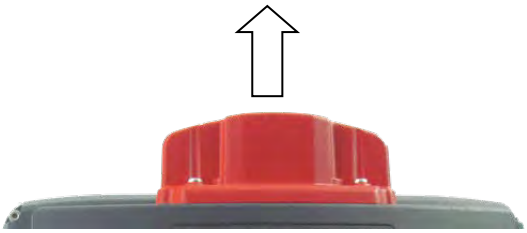


Fig. 6.2: Wi-Fi, WWAN, LTE 4G antenna (Multiband)

Technical data	
Application	Wi-Fi IEEE 802.11 ac/a/b/g/n Dual Band with MRC WWAN 4G Bluetooth 4.2+HS
Wi-Fi frequency range	Band 1: 2400 to 2483.5 MHz Band 2: 5150 to 5875 MHz
WWAN frequency bands with EC25-E	FDD LTE: B1/B3/B5/B7/B8/B20 TDD LTE: B38/B40/B41 WCDMA: B1/B5/B8 GSM: 900/1800
WWAN frequency bands with EC25-A	FDD LTE: B2/B4/B12 WCDMA: B2/B4/B5
Bluetooth features	See section *6.4.1 Bluetooth*
Number of antennas	4
Available color	Red
Type	PIFA antenna (Wi-Fi), Dipole antenna (WWAN)
Antenna gain	Wi-Fi: Max. 2.8 dBi (2.4G Band), 2.8 dBi (5G Band) WWAN: Max. 3.5 dBi
Impedance	50 Ω
Polarization	Vertical/horizontal
Maximum transmitting power	Wi-Fi: 22 dBm WWAN: Class 3 (23dBm±2dB) for LTE FDD Class 3 (23dBm±2dB) for LTE TDD Class 3 (24dBm+1/-3dB) for TD-SCDMA Class 3 (24dBm+1/-3dB) for WCDMA Class E2 (27dBm±3dB) for EDGE 850/900MHz Class E2 (26dBm+3/-4dB) for EDGE 1800/1900MHz Class 4 (33dBm±2dB) for GSM 850/900MHz Class 1 (30dBm±2dB) for GSM 1800/1900MHz
Compatible Wi-Fi card:	SPARKLAN WPEQ-261 ACN (BT)

	(see section *6.2.1 Available* radio cards))
Compatible WWAN card:	USA: QUECTEL EC25A Europe: QUECTEL EC25E (see section *6.2.2 Available* Radio cards)

6.3.3. External Wi-Fi antenna IEEE 802.11 a/b/g/n

Fig. 6.5: External Wi-Fi antenna

Technical data	
Application	Wi-Fi IEEE 802.11 a/b/g/n Dual Band
Mounting location	For detached mounting, e.g. on the roof of the forklift
Wi-Fi frequency range	Band 1: 2400 to 2485 MHz Band 2: 5150 to 5875 MHz
Number of antennas	1
Type	Dipole antenna
Antenna gain	Band 1: Max. 3.5 dBi Band 2: Max. 2.9 dBi
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	22 dBm
Corresponding Radio cards:	SUMMIT/LAIRD SDC-PE15N SPARKLAN WPEQ-261 ACN (BT) (see section *6.2.1 Available* radio cards)

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

Fig. 6.7: 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	Dipole antenna
Antenna gain	Max. 3.02 dBi
Impedance	50 Ω
Polarization	Vertical
Dimensions	Height 79.45 mm Diameter 42 mm
Cable length	3 m
IP protection	IP67 and IP69K
Max. transmitting power of antenna	Class 3 (23dBm±2dB) for LTE FDD Class 3 (23dBm±2dB) for LTE TDD Class 3 (24dBm+1/-3dB) for TD-SCDMA Class 3 (24dBm+1/-3dB) for WCDMA Class E2 (27dBm±3dB) for EDGE 850/900MHz Class E2 (26dBm+3/-4dB) for EDGE 1800/1900MHz Class 4 (33dBm±2dB) for GSM 850/900MHz Class 1 (30dBm±2dB) for GSM 1800/1900MHz
Compatible WWAN card:	USA: QUECTEL EC25A Europe: QUECTEL EC25E (see section *6.2.2 Available* Radio cards)

6.4. Bluetooth (optional)

The DLT-V72 offers the following Bluetooth options:

6.4.1. Bluetooth integrated: Wi-Fi card SPARKLAN WPEQ-261ACN (BT)

Requirement: Use of the Wi-Fi card SPARKLAN WPEQ-261ACN (BT)

Technical data	
Type	Bluetooth 4.2+HS
Standards	V4.2, V4.0 LE, V3.0+HS, V2.1+EDR
Transmission rate	1 Mbps, 2 Mbps, up to 3 Mbps

6.4.2. Micro Bluetooth adapter (USB stick)

The optional micro Bluetooth adapter permits the Wi-Fi connection between the DLT-V72 and Bluetooth devices.
If the Bluetooth option was ordered, this adapter is already integrated into the Service USB interface under the antenna.

Technical data	
Type	USB adapter Bluetooth 2.0
Transmission rate	EDR transmission rate up to 2.1 Mbit/s
General range	10 m
Class	Class 2 Micro Size
Compatibility	Compatible with USB 2.0/1.1
	Supports A2DP stereo transmission

6.5. GPS receiver external (optional)

With the optional GPS receiver the DLT-V72 can be used for GPS navigation.
The GPS receiver has an integrated antenna for position data of the Global Positioning System (GPS) and communicates with the DLT-V72 via USB interface.
We recommend using only a GPS receiver approved by Advantech.

Fig. 6.8: External GPS receiver (optional)

Installation

The installation CD supplied with the GPS receiver includes installation files and a multi-lingual manual.

⇨ Please read the additional information in the manual about the GPS receiver.

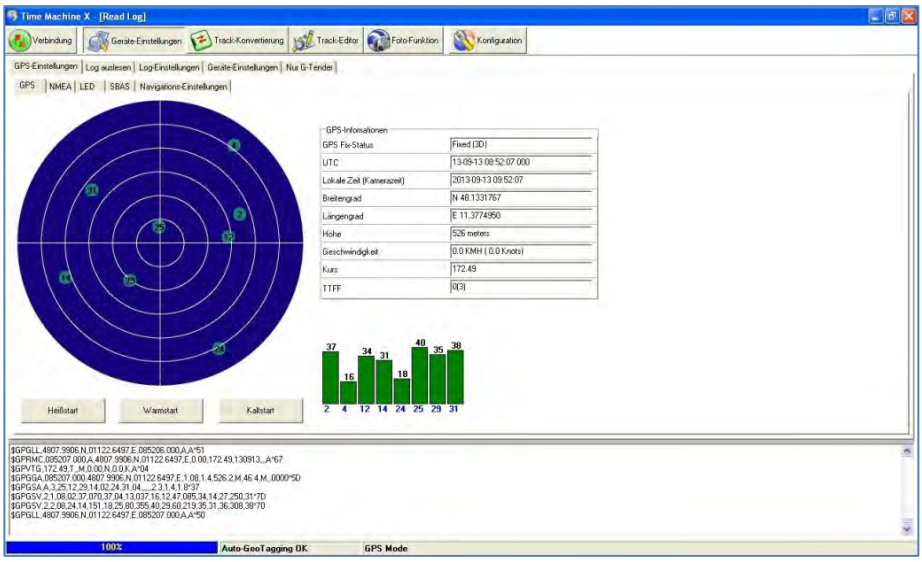


Fig. 6.9: Ext. GPS receiver, display example during installation

7. Operation

7.1. Switching the DLT-V72 on/off

The following factors determine how the DLT-V72 can be switched on and off:

- Is the DLT-V72 mounted on a vehicle and connected with the ignition signal?
- What are the automatic shutdown settings that were defined in the DLoG Config configuration program?

7.1.1. Switch on

Switch the DLT-V72 on as follows, depending on the configuration:

⇨ Press the <Power> button.

⇨ Or: By applying the supply voltage.

⇨ Or: Through the ignition signal of the vehicle (depends on automatic shutdown settings).

Fig. 7.1: <Power> button of the DLT-V72

7.1.2. Switch off

Switch the DLT-V72 off as follows, depending on the configuration:

⇨ Press the <Power> button of the activated DLT-V72.

⇨ 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.

⇨ Or: Deactivate the ignition of the connected vehicle (depends on automatic shutdown settings).

WARNING

Electric shock due to incomplete switching off of the DLT-V72 with integrated UPS.

Because of the lithium-ion battery pack, the integrated UPS may still carry current even if the DLT-V72 itself is switched off.

Reason: If the DLT-V72 has been configured to also start without <Power> button and ignition in the "DLoG Config" program, this setting will need to be changed first. Otherwise, the DLT-V72 will restart after a short pause as long as there is available battery capacity.

⇨ Shut down the DLT-V72 via the operating system function.

⇨ Disconnect from the power supply.

⇨ Open the battery cover; unplug the battery pack.

Time between switching off and on: 10 seconds

After the DLT-V72 has been shut down and switched off, it takes 10 seconds until the device will react to a switch-on signal (<Power> button / ignition).

7.2. Operating the touchscreen

Depending on the equipment, the DLT-V72 will have:

– A resistive touchscreen

– or a projected-capacitive touchscreen with glass front (PCT).

NOTICE: Physical damage

Improper operation can cause damage and downtimes to the DLT-V72 and to the connected complete system.

Operators of the DLT-V72 must be trained in the handling of the device.

Operating the touchscreen

All touchscreens can be operated with:

- Clean, dry fingers.
- Clean, dry, soft gloves.

Resistive touchscreens with:

- Suitable touch stylus (plastic or wood, rounded tip)

PCT touchscreens with:

- Suitable touch stylus with capacitive (electrically conductive) tip.

Prevent damage to the touchscreen

Valid for all touchscreen versions: Resistive and PCT!

⇨ Keep the touchscreen clean.

⇨ 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).

⇨ Make sure that no adhesives get on the surface of the touchscreen.

⇨ Ensure that the screen surface is not influenced by high voltages or static electricity.

⇨ Do not use excessive force when touching touchscreens, do not hit or press hard.

⇨ If the device with the touchscreen is placed down: Place a clean, soft cloth underneath.

NOTICE: Physical damage

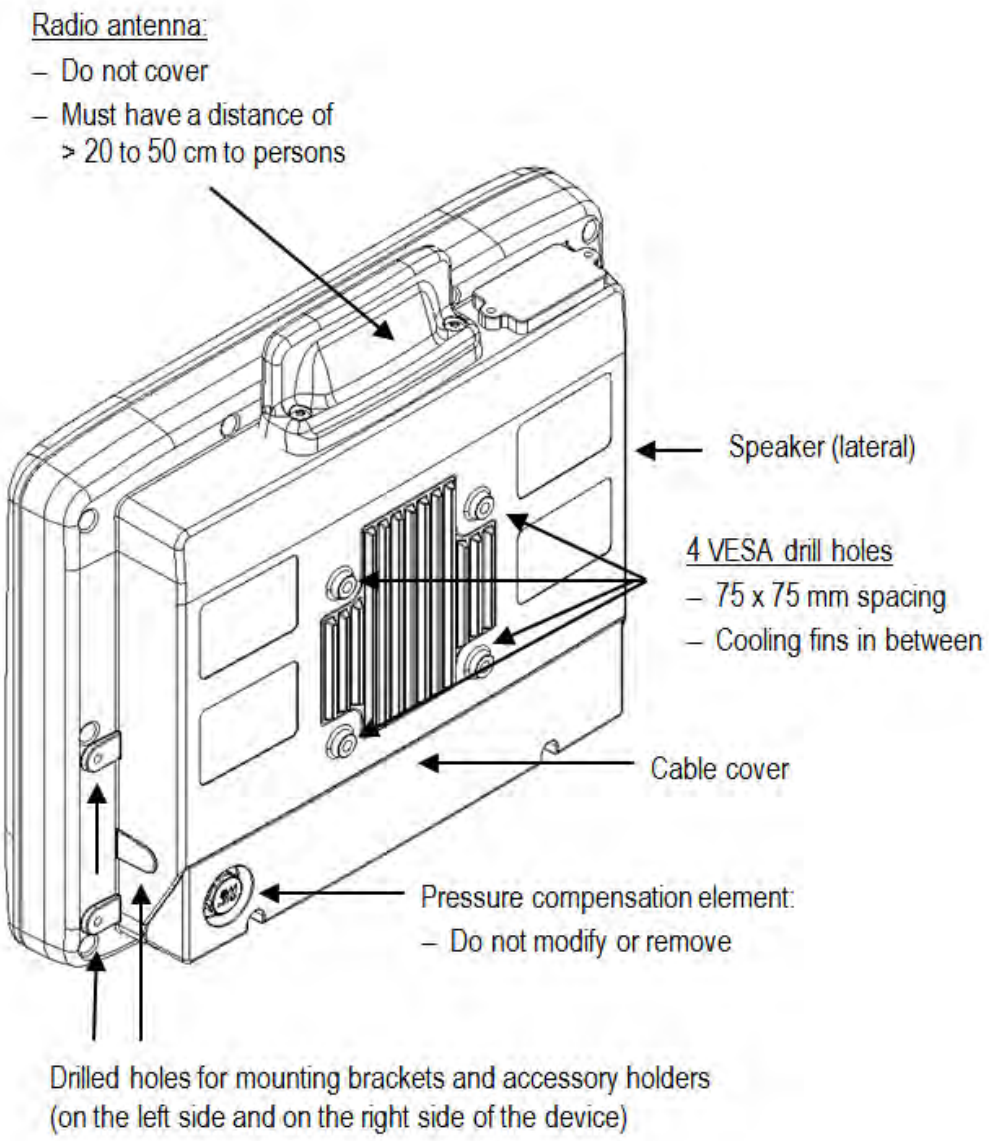
Salt water on the PCT touchscreen can be interpreted as a "touch" and lead to malfunctions.

Multi-touch capability

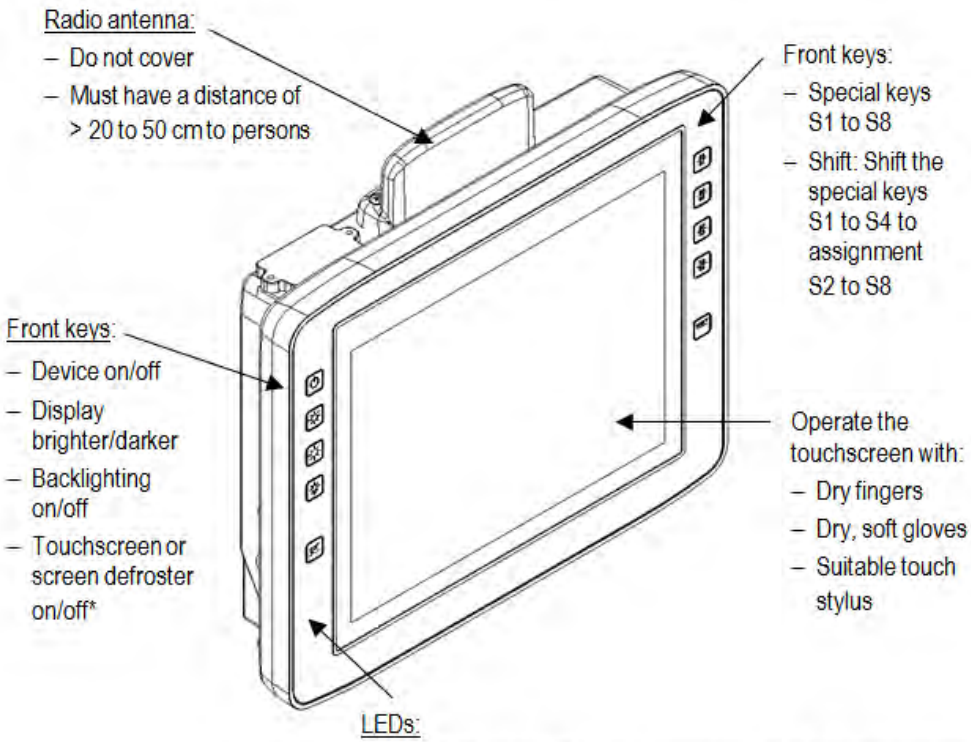
Depending on the installed operating system type, the PCT touchscreen of the DLT-V72 is multi-touch capable. This means it can detect two touches simultaneously.

7.3. Operation elements

7.3.1. Rear side: DLT-V72 all device models



7.3.2. Front side: DLT-V7210 P, R, D and DLT-V7212 P, R, D



LED1	Function 1: Display of excessive or insufficient temperature in the device; Temp LED flashes red Function 2: Display of screen defroster active or inactive – Temp LED on (red): Screen defroster is active – Temp LED off: Screen defroster is inactive
LED2	LED on (green): Indicates access to the flash drive
LED3	LED on (green): Display of available internal supply voltage

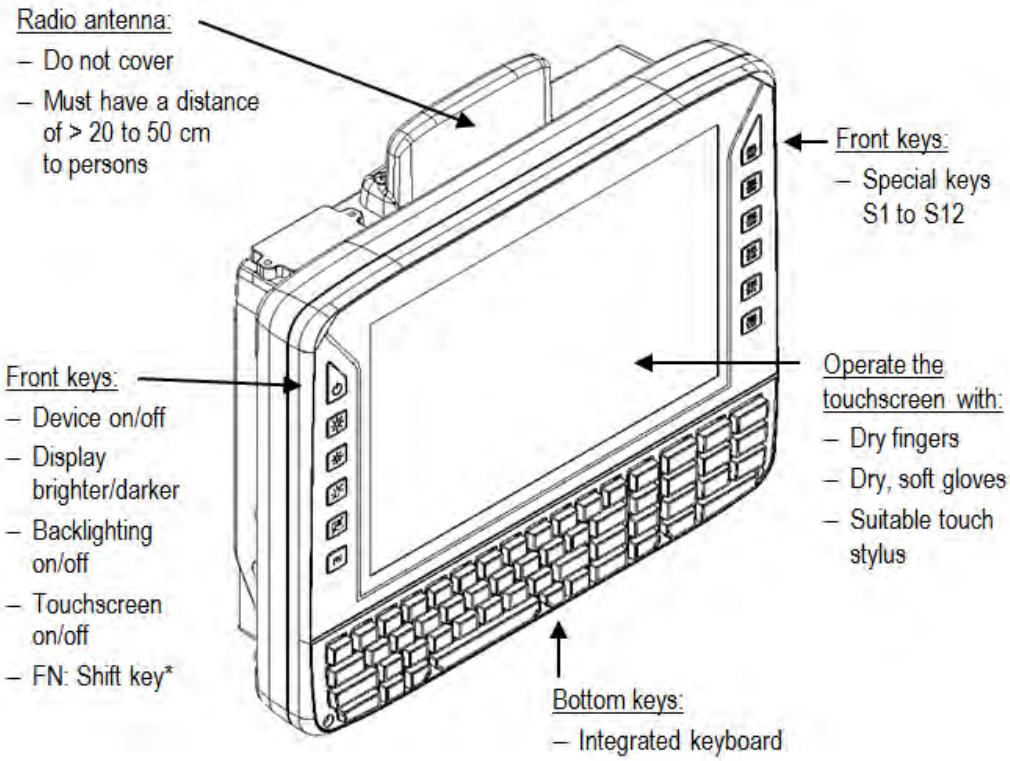
* Note with front key "Touchscreen or screen defroster on/off":

Function 1: Activate/deactivate touchscreen – Touch LED on (orange): Touchscreen inactive – Touch LED off: Touchscreen active
Function 2: In combination with the shift key: – Activate/deactivate screen defroster (optional) Note: The **Temp** LED indicates whether the screen defroster is active or inactive not the LED above this key.

Background lightning of the display on / off.

NOTE: The DLT-V7210K will continue to react to keyboard, mouse and touchscreen inputs even if the backlight is switched off.

7.3.3. Front side: DLT-V7210 K, KD



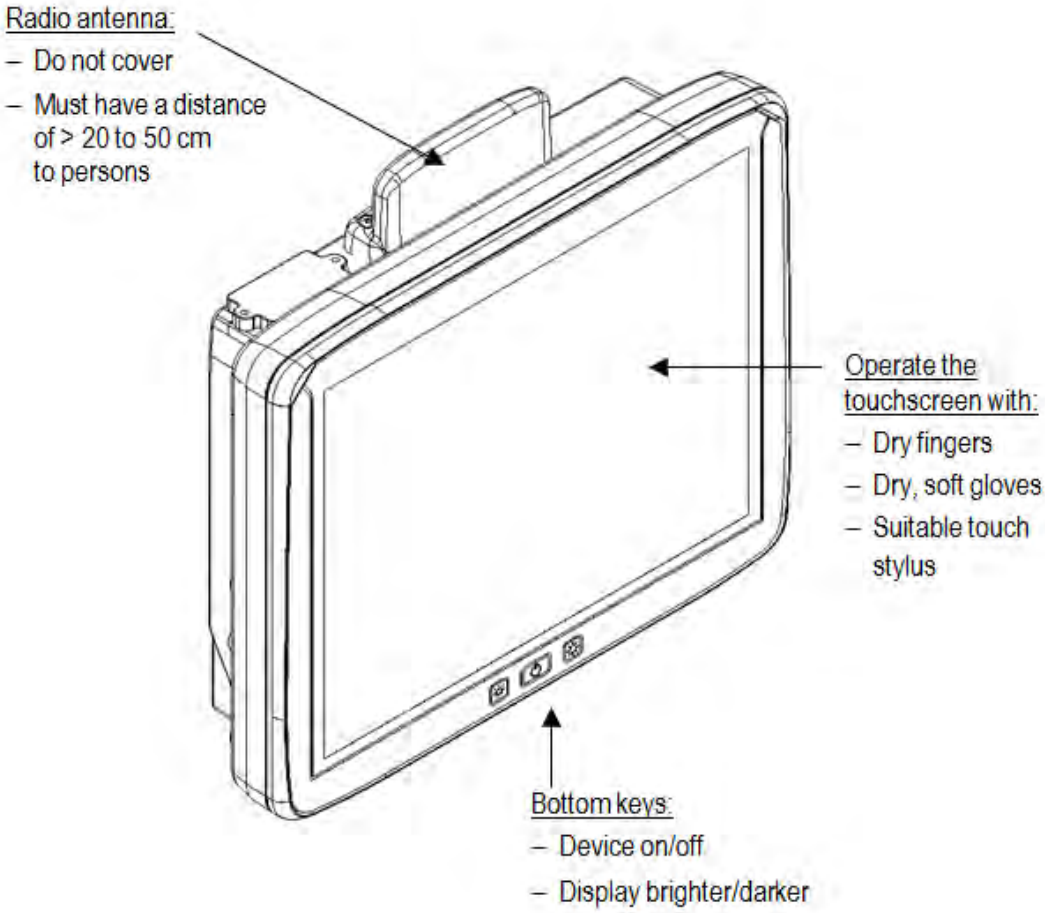
*If the FN key is pressed (LED on):

- The special keys to the right on the device are shifted to assignment S2 to S12 (permanent, until FN is pressed again).
- The brightness/illumination keys to the left on the device affect the integrated keyboard, not the display (permanent, until FN is pressed again).
- The alternative characters of the individual keys shown in red are activated on the integrated keyboard (not permanent).

Background lightning of the display on / off.

NOTE: The DLT-V7210K will continue to react to keyboard, mouse and touchscreen inputs even if the backlight is switched off.

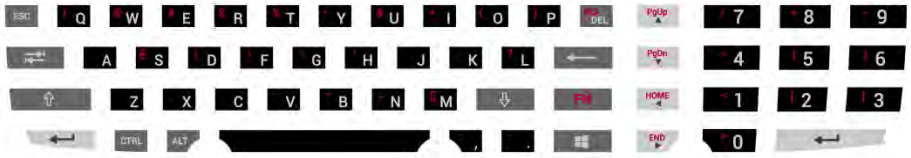
7.3.4. Front side: DLT-V7212 P+



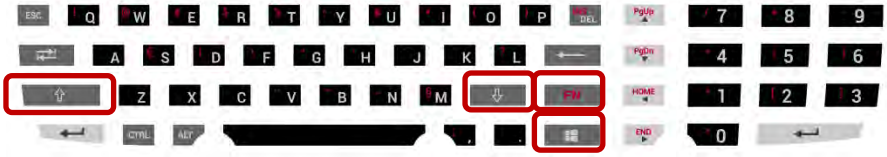
7.3.5. Integrated keyboard

The integrated keyboard of the DLT-V7210 K and KD models is available in three languages: German, English and French.

Example English version (QWERTY)



Description of specific keys



Key	Function
⇧	<Shift> key
⇩	Caps Lock: permanent switch to uppercase letters
FN	Activate the **FN** key on the left of the device: See the explanation there.
⊞	Windows key

7.4. Operating states

Status of LEDs		DLT-V72 status
Supply voltage	Temperature	
OFF	OFF	Initial state, idle time – waiting for a new ignition signal or for the <Power> key after switch-off; no voltage supply
OFF	FLASHING	Temperature sensor faulty
FLASHING	OFF	DLT-V72 is in standby mode (S3)
OFF	ON	Computer will only start if the temperature **in the device** is in the range between -30 and +59 °C again.
ON	OFF	Computer start-up/normal operational state/shutdown delay time
ON	ON	Screen defroster active
ON	FLASHING	Ambient temperature lies outside of the permitted range, i.e. < -30 or > +50 °C

7.5. Software keyboard (optional)

The optional DLoG software keyboard brings the complete standard keyboard with function keys and numeric pad directly to your DLT-V72 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. 7.2: Software keyboard

If the software keyboard was ordered together with the DLT-V72 industrial PC, then the program will have been fully pre-licensed by the Advantech production department. For subsequent installation, an installation program is available.

The manual for the DLoG software keyboard is available on our websites.

7.6. Operating the DLT-V72 with UPS

WARNING

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

DLT-V72 devices with integrated UPS contain lithium-ion battery packs. These can ignite if handled or stored improperly (risk of fire), cause chemical burns or release toxic substances.

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

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

8. General device configuration

WARNING

Risk of injury and damage due to improper configuration.

These instructions are directed to skilled personnel.

⇨ Only qualified skilled personnel (e.g. IT personnel with good knowledge of PCs, operating systems and wireless networks) may configure the DLT-V72.

If the DLT-V72 is incorrectly configured, warranty for this device will be void.

8.1. Operating systems available (optional)

Please find the latest overview of all supported operating systems in the DLT-V72 data sheets on our websites.

The following operating systems are available at the time of manual creation, Feb 2019:

- Windows 10 IoT Enterprise
- Windows 7 Pro
- Windows Embedded Standard 7
- Debian-based Linux
- IGEL Linux

8.2. MS-Windows (optional)

8.2.1. General

If a DLT-V72 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-V72 units with a pre-installed operating system, the system is located on the C partition.

When a DLT-V72 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.

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

The **DLoG Config** software is used to configure DLT-V72 devices with a Microsoft Windows operating system.

For configuring DLT-V72, the DLoG Config version **5.0** or higher is required.

Configuration examples:

- Automatic shut down
- Wi-Fi status display

- Front-key assignment
- Network settings

And depending on the equipment of the DLT-V72 also:

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

The DLoG Config manual is available on our websites.

8.2.3. WES 7 and Win 7 Prof.: USB icon in the taskbar

Under WES 7 and Win 7 Professional, please observe:

⇨ Do not click on the **Eject DLT-V72xx** button, which fades in on the taskbar using the **Eject Media** icon:

If the **Eject DLT-V72xx** button is clicked on:

- Malfunctions during the communication with the environment controller are possible.
- The DLT-V72 must be restarted.

8.2.4. Energy options and battery pack durability

Valid for all MS Windows operating systems:

ATTENTION: Physical damage

All DLT-V72 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: The power saving plan is set to **power options (DLoG).**

⇨ Do not modify or deactivate the **power options (DLoG)**.

Under certain circumstances and configurations a modification may cause the battery pack of the integrated UPS to stop functioning and need to be sent in for repair.

8.2.5. Suppress automatic Windows 10 updates

Under Windows 10, the automatic Windows updates can no longer be deactivated; the "**Never check for updates**" setting in the **Windows Update** dialog is not available.

With the following entry in the Windows registry, the **"Never check for updates"** setting can be set anyway:

⇨ Manually create the following entry in the Windows registry (type "dwords"):

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU]
"NoAutoUpdate"=dword:00000001
[HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Policies\Microsoft\Windows\WindowsUpdate\AU]
"NoAutoUpdate"=dword:00000001
```

- ⇨ Restart Windows.
- ⇨ Via **Start -> Settings -> Update & Security,** switch to the **Windows Updates** dialog.
- ⇨ Click on **Retry** to search for updates.
- ⇨ Click on **Advanced Options**.
  The **Never check for updates** setting is now set.

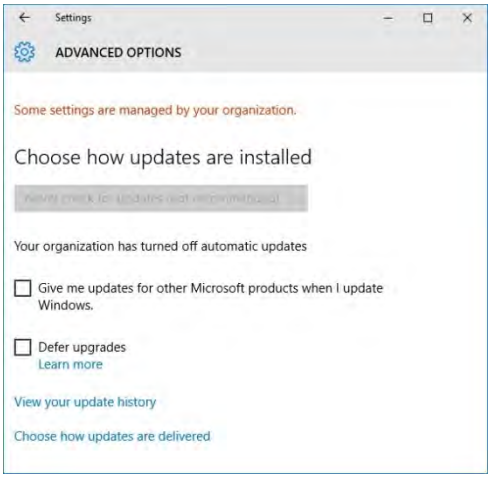


Fig. 8.1: Automatic Windows 10 Updates

To deactivate **Never check for Updates**:

- ⇨ Delete the entry manually from the Windows registry.
- ⇨ Restart the computer.
- ⇨ Search for updates.

8.3. Android

The configuration of the DLT-V72 with Linux with regard to radio networks, touchscreen calibration, etc. is described in the “Advantech Android™ Manual”.

Please contact our Technical Customer Support if required.

8.4. Linux (optional)

The configuration of the DLT-V72 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.

8.5. Automatic shut down

8.5.1. Functional description

The DLT-V72 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-V72 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-V72'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-V72 <Power> button is pressed, the DLT-V72 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-V72 starts the operating system normally.

Once these checks have been successfully completed, the DLT-V72 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-V72's internal temperature and the state of the ignition input are constantly monitored.

If the DLT-V72'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-V72, 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-V72 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).

Device shut down

If the operating system is shut down, all applications will be notified via the Windows message "WM_QUERYENDSESSION" first.

Every application must then respond within the time set in the registry. If there is no response within the preset time, the application will be hard-terminated.

It may not be possible to close an application automatically if it has unsaved data. Example: For example, the WORDPAD.EXE program (included in Windows) cannot be closed automatically if there are unsaved changes. In such a situation, WORDPAD.EXE will acknowledge the "WM_QUERYENDSESSION" Windows message by prompting the user to choose whether to save or not.

All applications that can be terminated without user confirmation using the keyboard shortcut <ALT> + <F4> will normally also respond correctly to the "WM_QUERYENDSESSION" message and therefore do not need to be hard-terminated.

To ensure that important data is saved correctly, the application must respond appropriately to “WM_QUERYENDSESSION”, i.e. the backup data must be saved without user confirmation and within the preset time.

8.5.2. Automatic shutdown configuration

Configure automatic shutdown behavior of DLT-V72 with MS Windows

Configuring the automatic shutdown is described in the “DLoG Config Manual”.

The "DLoG Config Manual" is available on our websites.

Configure automatic shutdown behavior of DLT-V72 with Android

Configuring the automatic shutdown is described in the “Advantech Android™ Manual”.

Please contact our Technical Customer Support if required.

Configure automatic shutdown behavior of DLT-V72 with Advantech Linux

Configuring the automatic shutdown is described in the “Advantech Linux Manual”.

Please contact our Technical Customer Support if required.

9. Wi-Fi configuration

9.1. Safety notice

CAUTION

Danger of radiation emission.

DLT-V72 devices with radio technology emit high frequency energy (abbreviation: HF). To protect persons against HF radiation:

- ⇨ Mount the DLT-V72 so that persons and domestic animals maintain a minimum distance of 20 to 50 cm from the radio antennas.
- ⇨ Ensure that persons observe this minimum distance when operating the DLT-V72.
- ⇨ High frequency energy can interfere with technical devices. For this reason, do not use the DLT-V72 in the vicinity of pacemakers or other medical devices.
- ⇨ Only operate the DLT-V72 with radio modules that are approved by the manufacturer for this device.
- ⇨ Make sure that the transmission power and the radio frequency of the DLT-V72 comply with the regulations for the respective country where the device is deployed.
- ⇨ 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-V72. The regulatory authorities in the relevant country can provide information on this.

Any modifications to the DLT-V72 which are not expressly approved by the party responsible for the compliance can lead to the withdrawal of the operating license for this device.

Examples of country-specific regulations:

Region:	Radio approval:
EU	RED (formerly R&TTE)
China	SRRC
Japan	MIC (formerly TELEC)
Taiwan	NCC
Canada	Canada IC
USA	FCC

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 (300 Mbps if using IEEE 802.11n) 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:

1. Radio card (set transmission power)
2. Connecting cables
3. 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

9.2. Differences between MS Windows and Linux

The radio configuration of the DLT-V72 with MS Windows operating system is described in the following manual sections.

The radio configuration of the DLT-V72 with Linux is described in the “Advantech Linux Manual”.

Please contact our Technical Customer Support if required.

9.3. Preparation work at the factory

The following preparations have already been carried out at the factory for the optional radio functionality of the DLT-V72:

4. The radio card and the corresponding drivers are installed.
5. A default profile with basic settings is defined.

NOTICE: Property damage

No access to radio cards in the DLT-V72

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.

9.4. Customer-specific settings

To create a customer-specific profile:

⇨ Use the configuration program that is already factory-installed on the DLT-V72.

⇨ Observe the description of the configuration programs in the following sections.

Radio card		Operating system	Configuration program
SUMMIT/LAIRD SDC-PE15N		Windows	Laird Connection Manager (LCM) Password: SUMMIT (upper case mandatory)
			Wireless Zero Configuration (abbreviation: WZC) No password required
SPARKLAN WPEQ 261 ACN (BT)	Qualcomm Atheros QCA61x4A Wireless Network Adapter	Windows	Advantech Wi-Fi Client Manager (IGX Tool) Password: gold
			Wireless Zero Configuration (abbreviation: WZC) No password required
		Linux	Linux Configuration Utility

9.5. Windows Zero Configuration (WZC)

WZC (Windows Zero Configuration) is a tool for automatic Wi-Fi configuration in MS Windows.

Comprehensive information can be found in the online help for the program.

9.6. Advantech Wi-Fi Client Manager (IGX Tool)

9.6.1. Area of application

This chapter describes the **Advantech Wi-Fi Client Manager** program version 1.00 under the following operating systems:

6. Win7Pro
7. WinEmbStd7
8. Win8.1IndPro
9. Win10IoTEnt

This chapter applies to DLT-V72 devices with the Radio card "SPARKLAN WPEQ-261ACN(BT) MiniPCIe".

9.6.2. After image reinstallation: Driver installation

If the image has been reinstalled, the DLT-V72 must be set up again using the IGX Wi-Fi driver. Two drivers are available:

10. Driver for Win7Pro \ WinEmbStd7
11. Driver for Win8.1IndPro \ Win10IoTEnt

9.6.3. Requirements

The currently available IGX drivers can be downloaded from the following website:

***www.advantech-service-iot.eu* -> Downloads -> Service -> Drivers -> Link to FTP: Advantech-DLoG_Products\Additional-Drivers-Software\WLAN_driver\X86_(DLoG_MPC_MTC_IPC_series\Sparklan_261_ACN_BT**

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

NOTE

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

9.6.4. Driver installation WinEmbStd7

If it is not known which operating system variant (32 or 64 bit) is installed on the DLT-V72, the system overview can be used for testing:

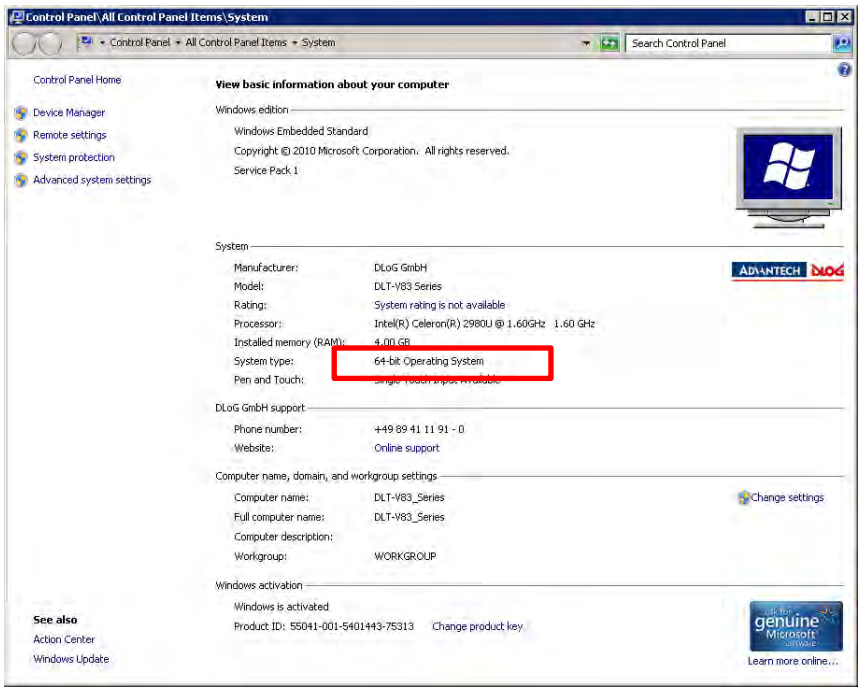


Fig. 9.1: System overview in Control Panel

For 32 bit systems:

⇨ Open the subfolder **Win7_X86**.

⇨ Run **Setup.exe** to start the installation.

For 64 bit systems:

⇨ Open the subfolder **Win7_X64**.

⇨ Run **Setup.exe** to start the installation.

NOTE

Setup.exe in the main folder is not supported in WinEmbStd7.

Example screenshot for 64 bit system, subfolder **Win7_X64**:

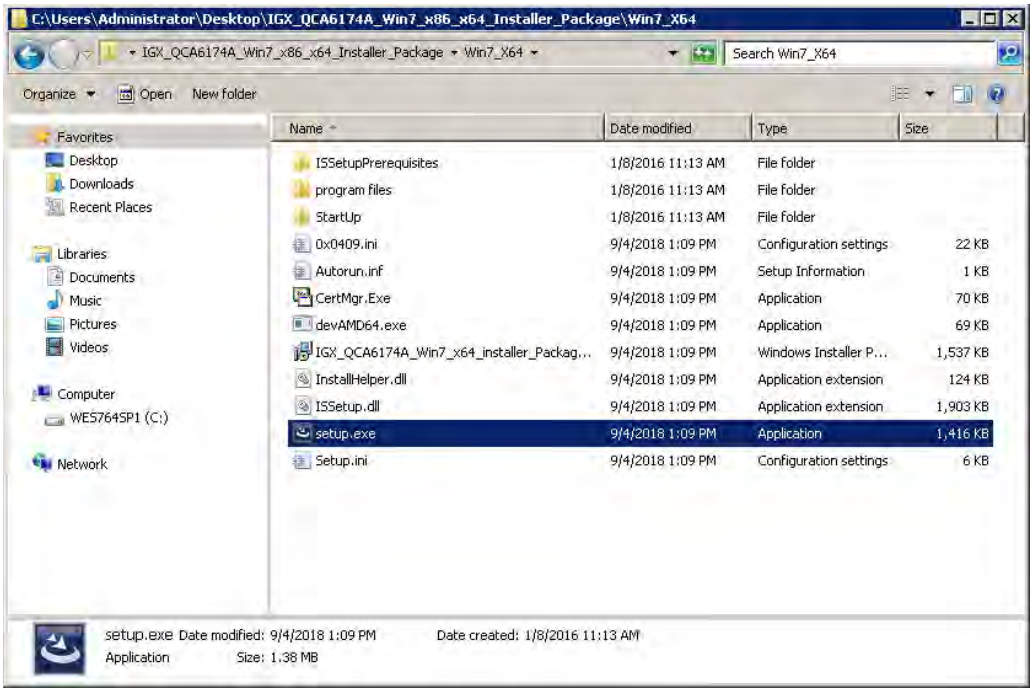


Fig.9.2: Setup.exe for 64 bit operating system in the subfolder Win7_X64

NOTE

The remaining installation workflow is covered in the next chapter and is identical in all operating systems.

9.6.5. Driver installation Win7Pro / Win 8.1 IndPro / Win 10 IoT

⇨ Open the corresponding installation directory depending on the operating system.

⇨ Run **Setup.exe** to start the installation.

NOTE

The following installation example shows the Win8.1 / 10 driver.

For Windows7 installation, please use the corresponding Win7 driver.

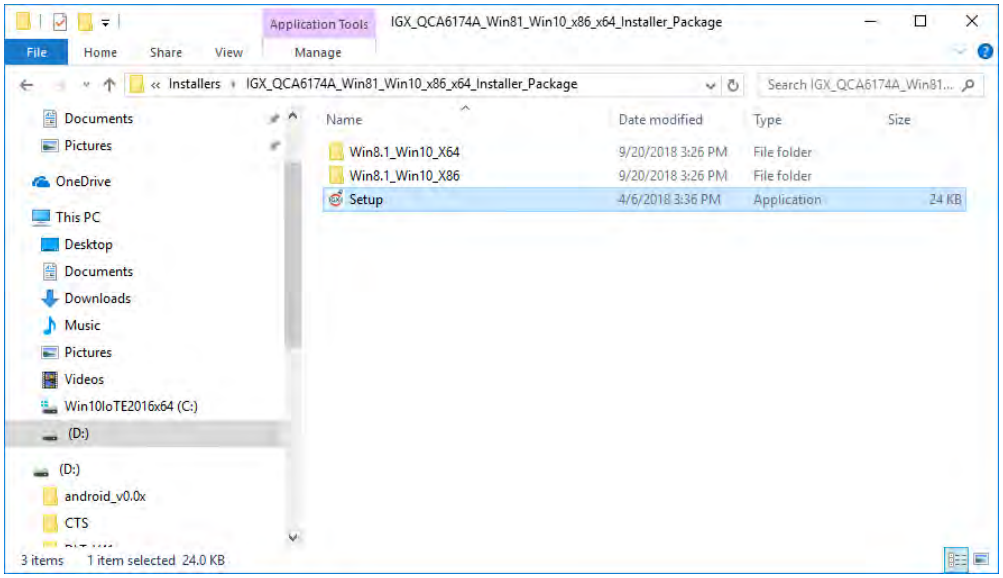


Fig.9.3: Setup.exe for 64 bit operating systems Win8.1 / 10

If the C++ executables / runtimes required for the installation are missing on the operating system, these must be set up before running the Wi-Fi driver installation.
Respond to the relevant prompt in the installation workflow.

On completion, the following window is displayed that starts the actual driver installation process:

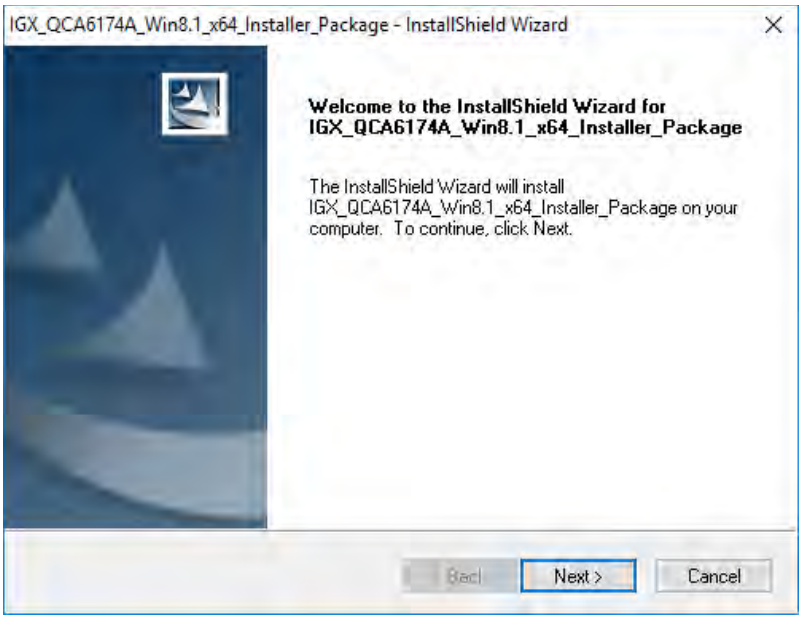


Fig.9.4: IGX driver installation Welcome dialog

⇨ Continue the installation with **Next**:

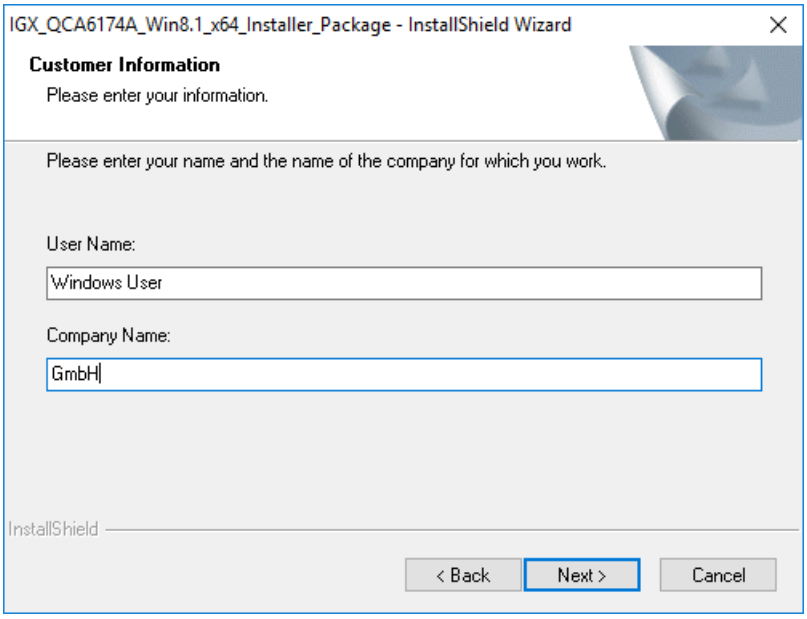


Fig.9.5: IGX driver installation user and company name

⇨ In this dialog, enter a **username** and a **company name** and confirm with **Next**.

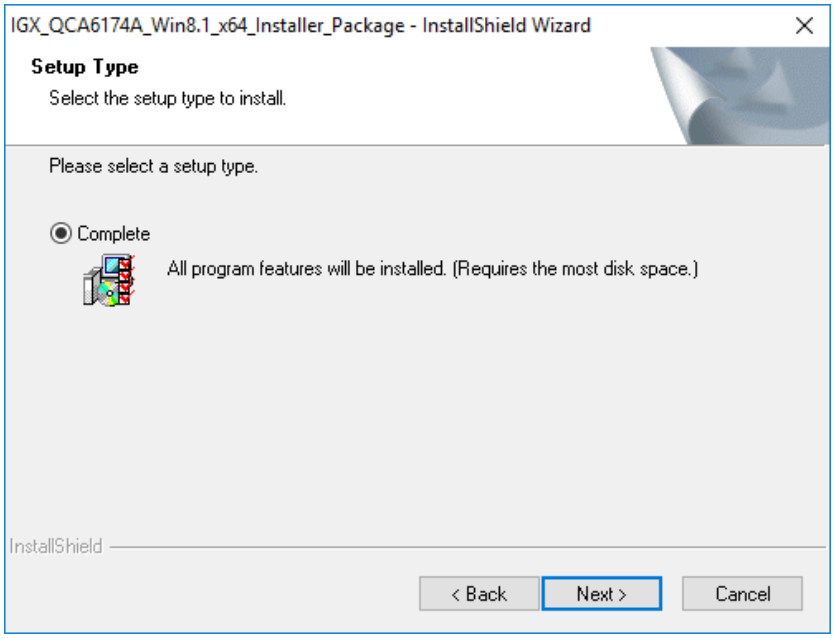


Fig.9.6: IGX driver installation All program features

⇨ Leave the **Complete** option enabled.

⇨ Continue the installation with **Next**.

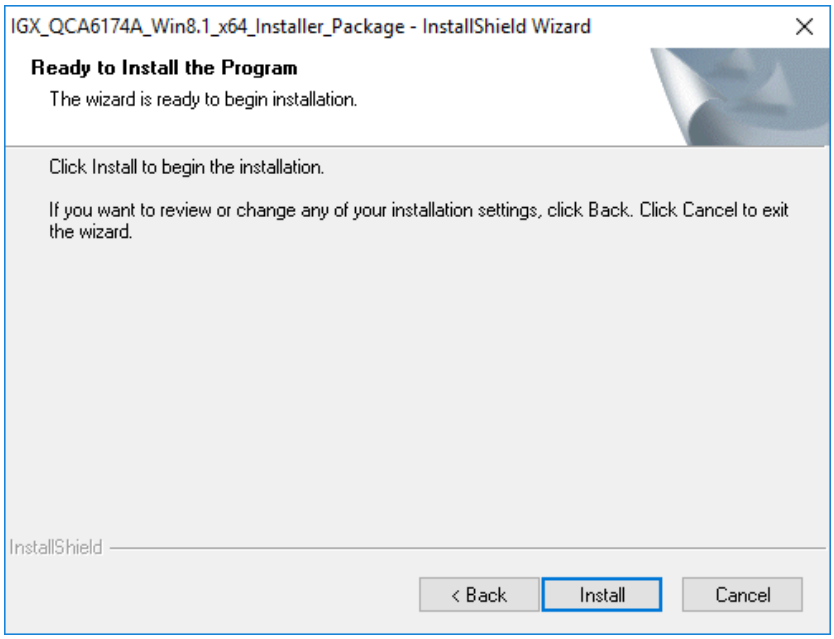


Fig.9.7: IGX driver installation starts

⇨ Continue the installation of the required files with **Install**.

During installation, the following window is opened:

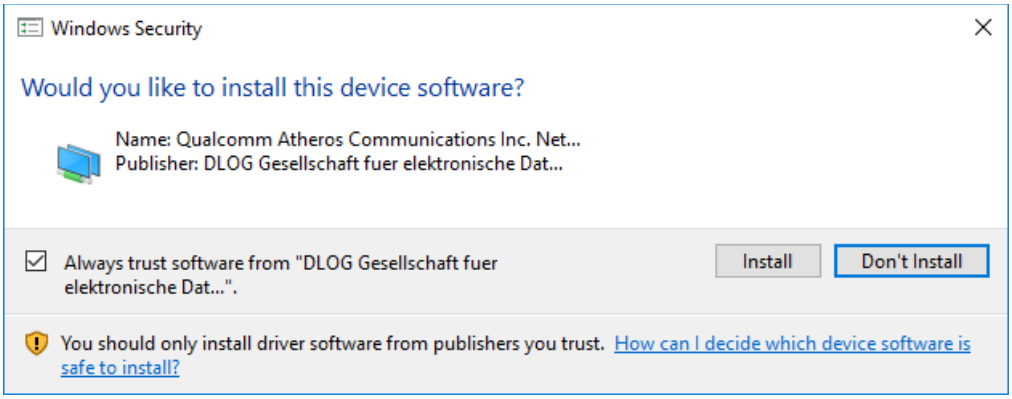


Fig.9.8: IGX driver installation Windows Security

⇨ Ensure that the **Always trust software from…** option has been selected.

⇨ Continue the driver installation with **Install**.

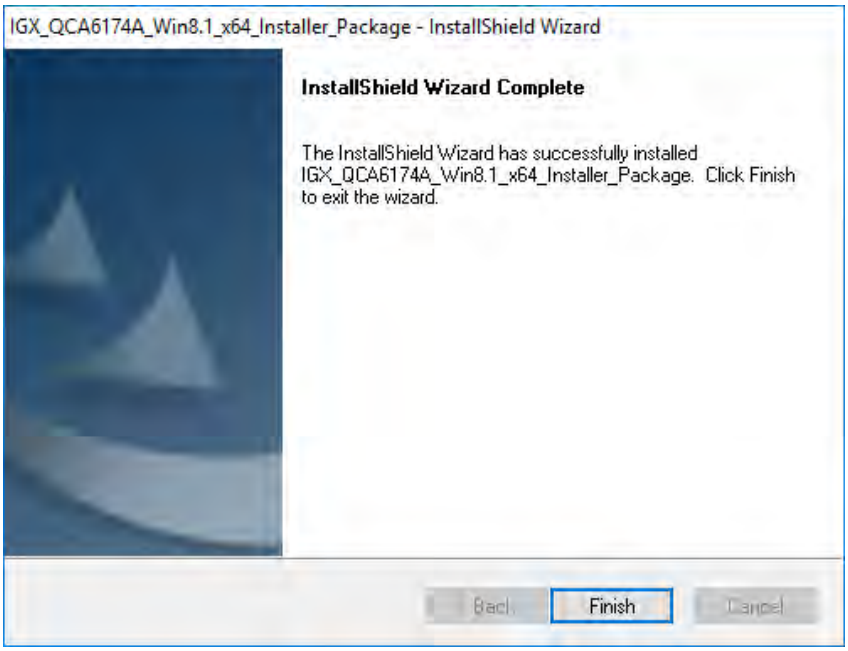


Fig.9.9: IGX driver installation Exit with Finish

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

NOTE

It is recommended to run the required system re-start directly following installation.

⇨ Select **Yes, I want to restart my computer now**.

⇨ Press the **Finish** button.

The system re-start is carried out.

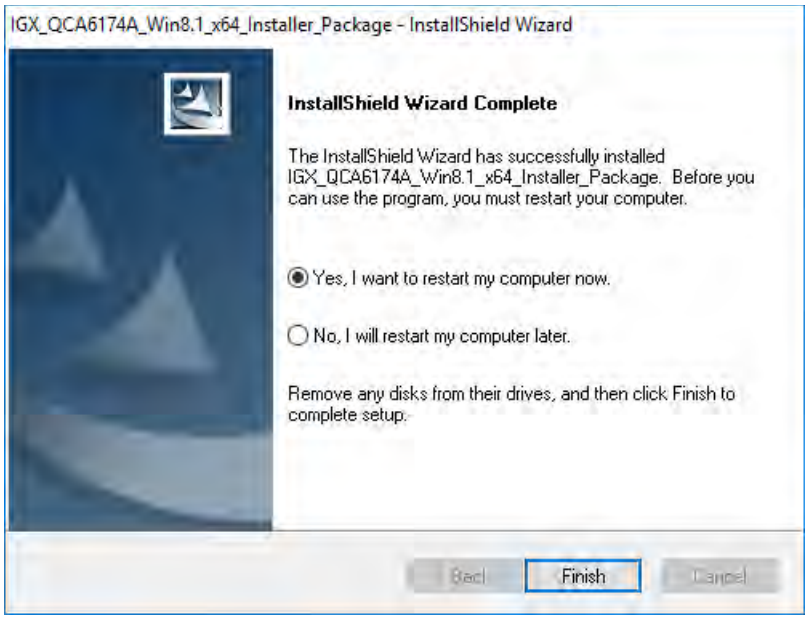


Fig.9.10: IGX driver installation Perform computer re-start

9.6.6. Start Wi-Fi Client Manager, Login

⇨ Launch the Wi-Fi Client Manager by double-clicking the **Launch WCU** icon:

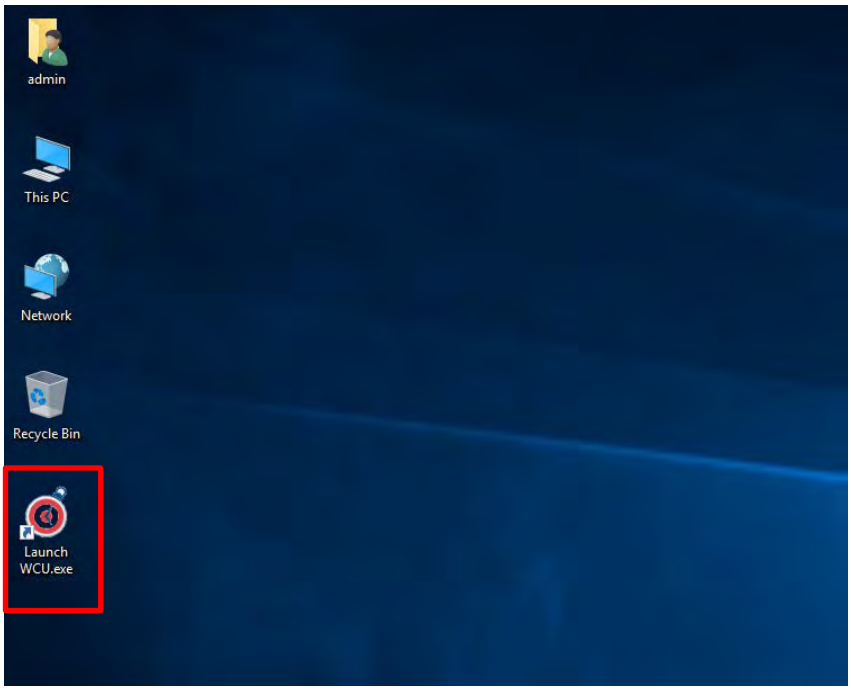


Fig.9.11: WCU icon on the desktop

You must login as "WCU_Administrator" first.

⇨ To do this, click **Admin Login**.

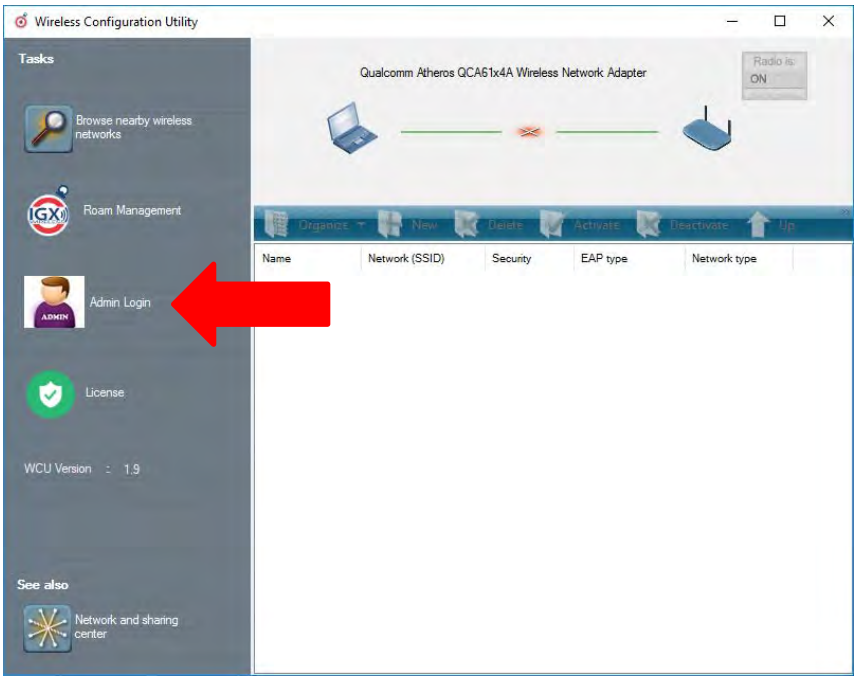


Fig.9.12: WCU main window, Admin Login

- ⇨ Then open the login window.
- ⇨ Enter the passport, which by default is "***gold***".
- ⇨ Confirm the input with the **Login** button.

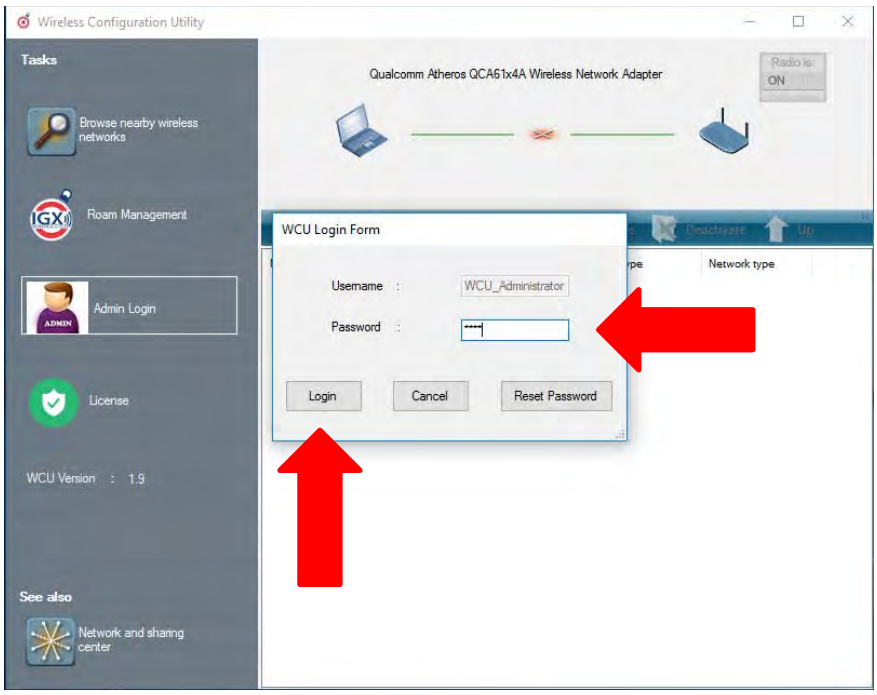


Fig.9.13: WCU-Administrator login window

9.6.7. Wi-Fi Client Manager functions

9.6.8. License

The **License** function lists the current status of the enabled options:

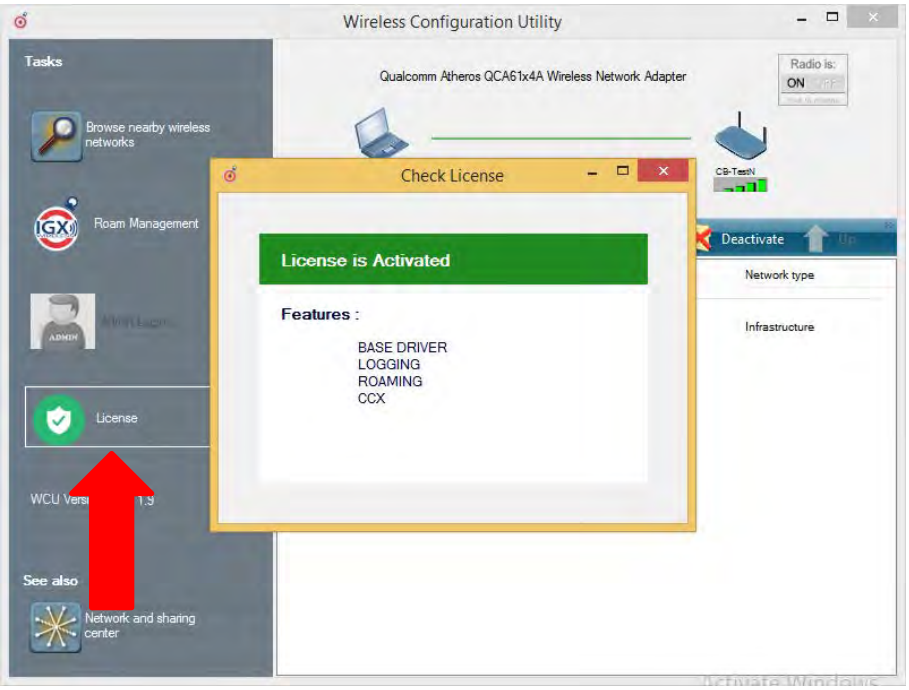


Fig.9.14: Check License

NOTE

The correct implementation of the Wi-Fi driver requires a valid license in combination with the DLT-V72 terminal.

If, as shown in the image, the license information is missing:

⇨ Contact technical customer support to solve the problem.

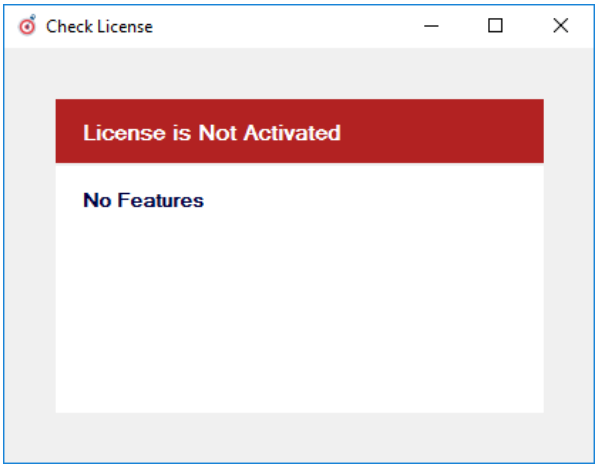


Fig.9.15: Info display via existing license

9.6.9. Browse nearby wireless networks

9.6.9.1. Set up the Wi-Fi connection

To set up a Wi-Fi connection, you can show all available networks using the **Browse nearby wireless networks** function.

You can select the appropriate network from here.

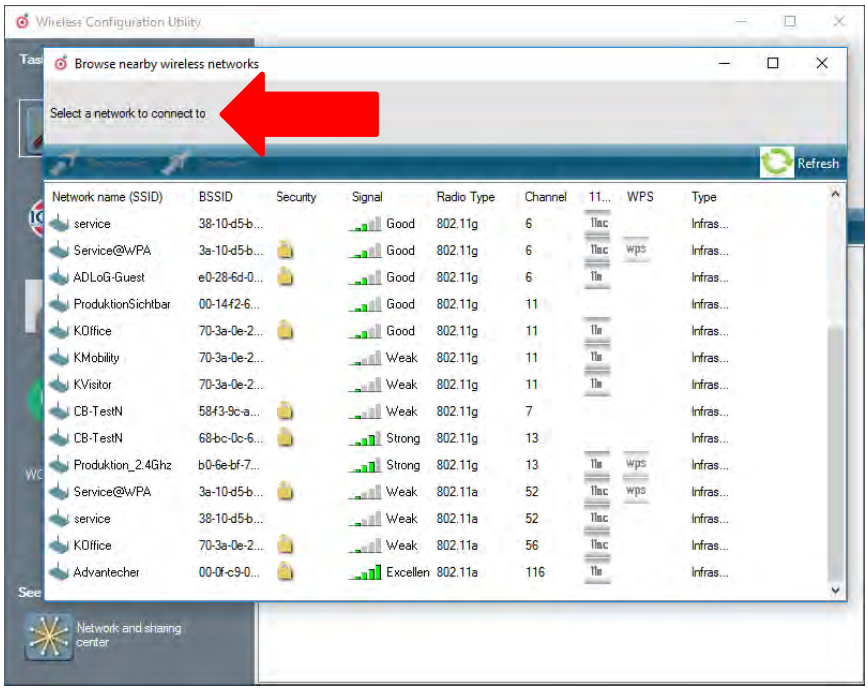


Fig.9.16: Browse nearby wireless networks function

9.6.9.2. Define security settings

The security settings must now be selected depending on the network.

These settings can be made in the **Advanced Security Settings** section:

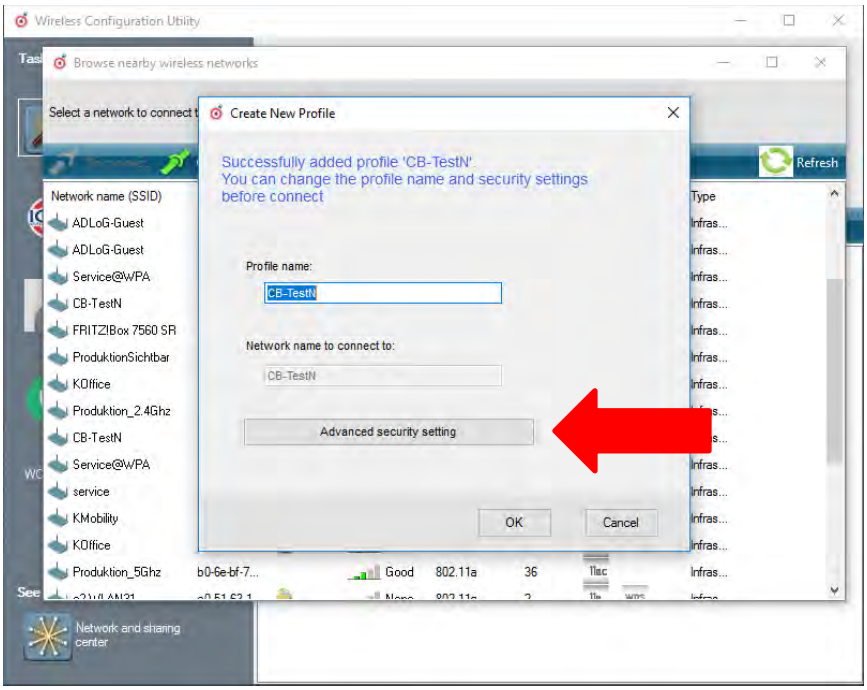


Fig.9.17: Advanced Security Settings dialog

To be able to connect with the network automatically, set the checkmark to **connect automatically when the network is in range**:

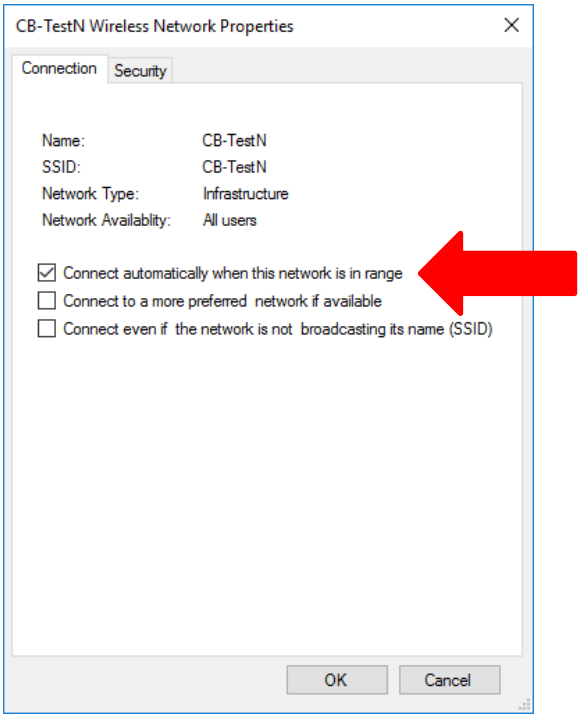


Fig.9.18: Connection when the network is in range dialog

Available parameters in the **Connection** and **Security** sections:

Connection

Connect automatically when the network is in range	Enable this parameter to set up an automatic connection to the network.
Connect to a more preferred network if available	In the event of multiple profiles being present, this option can be used to select the preferred profile.
Connect even if the network is not broadcasting its name (ssid)	This option can be used to set that a connection is still established when the name of the network is not being transmitted.

The **security settings** (*Fig.9.17: Advanced Security Settings dialog*) must be adapted. These settings differ depending on the network.

The **Security Type** must be selected first.

The following options are available:

- No authentication (Open)
- WPA2-Personal
- WPA2-Enterprise
- CCKM

The encryption process (**Encryption Type**) is then selected.

The options available here depend on the selected **Security Type**.

- None
- WEP
- AES

This results in the following selection options and settings:

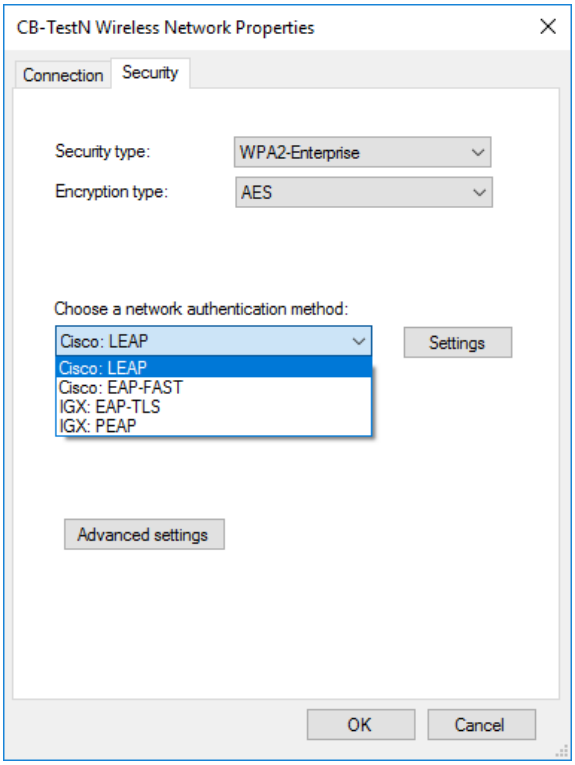


Fig.9.19: Security settings - network authentication methods

The **network authentication methods** shown, as well as their designations, differ depending on the operating system used.

For the remaining settings as in the case shown above (**Cisco: Leap**), the required additional parameters are carried out using the two buttons **Settings** and **Advanced settings**.

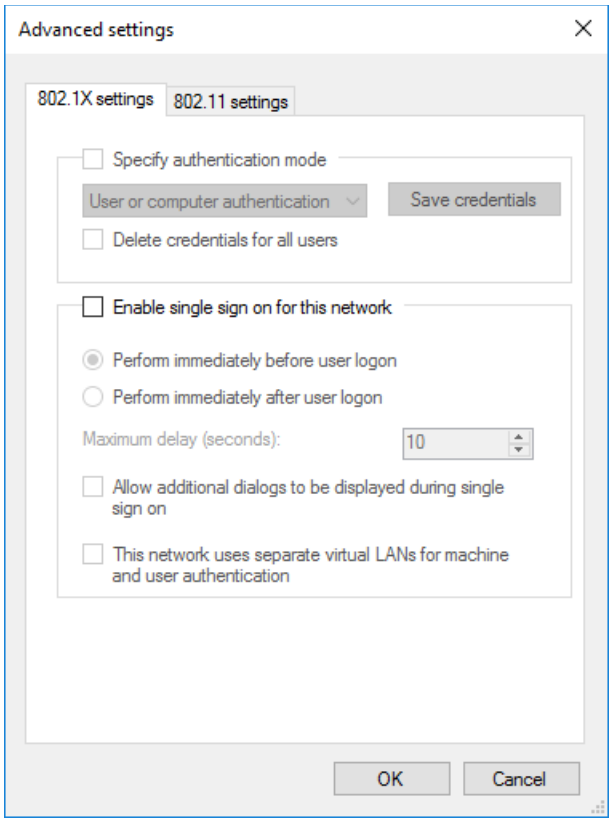


Fig.9.20: Security settings – Advanced settings (Cisco: Leap)

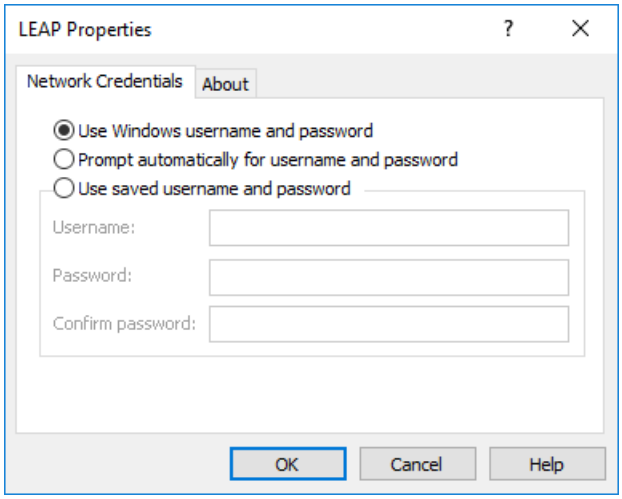


Fig.9.21: Security settings – LEAP properties

⇨ Lastly, the network key must be entered in the following example (**WPA2-Personal**) (**Network Security Key**).

⇨ Confirm the settings with **OK**.

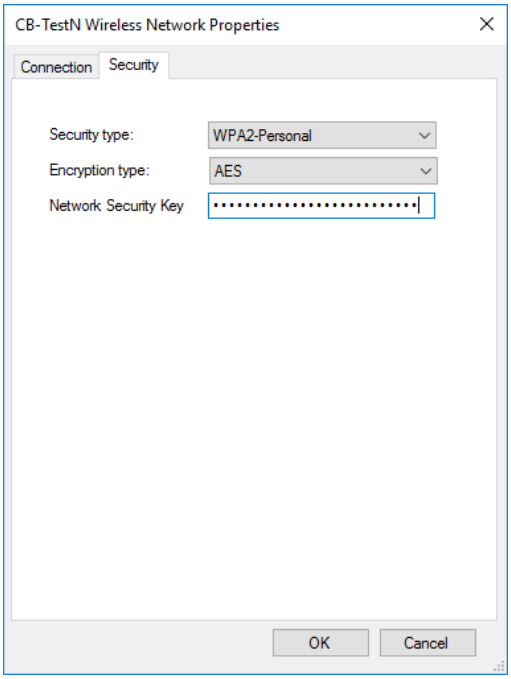


Fig.9.22: Wireless Network properties dialog

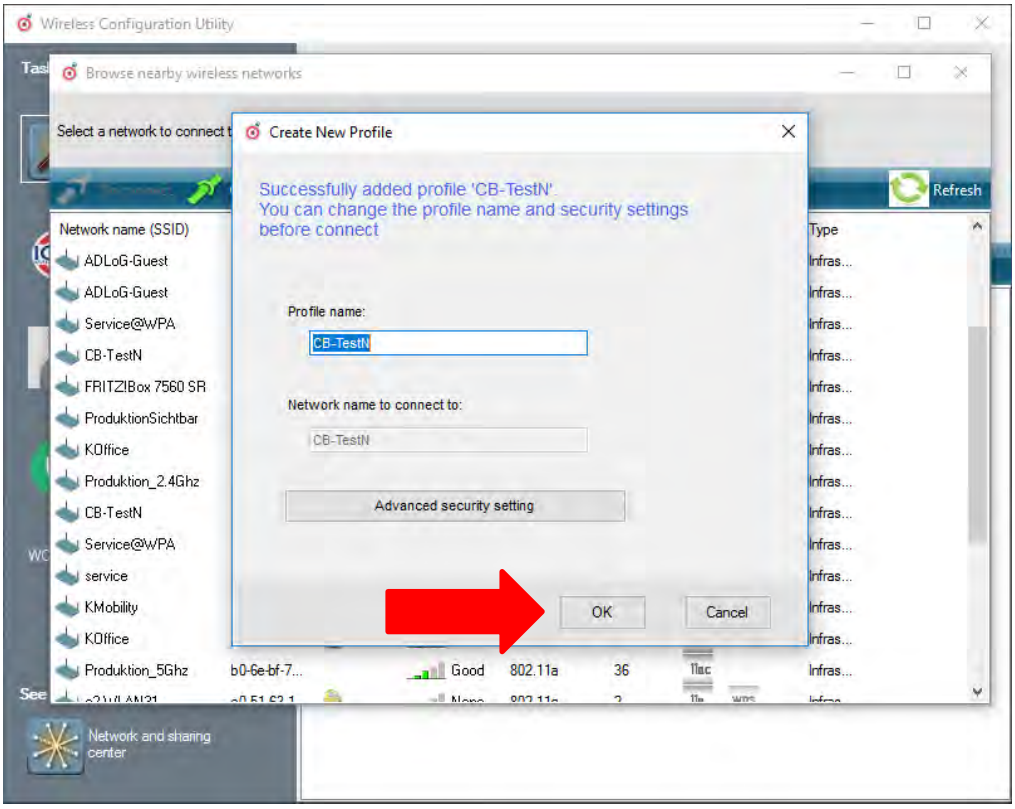


Fig.9.23: Create new profile dialog

⇨ Confirm the new profile with the **OK** button.

9.6.9.3. Establish network connection

After the Wi-Fi profile settings have been made, a connection to the network is established automatically.

The connection setup with the selected network is successful only if the "green" connection line is displayed in the **WCU** main window.

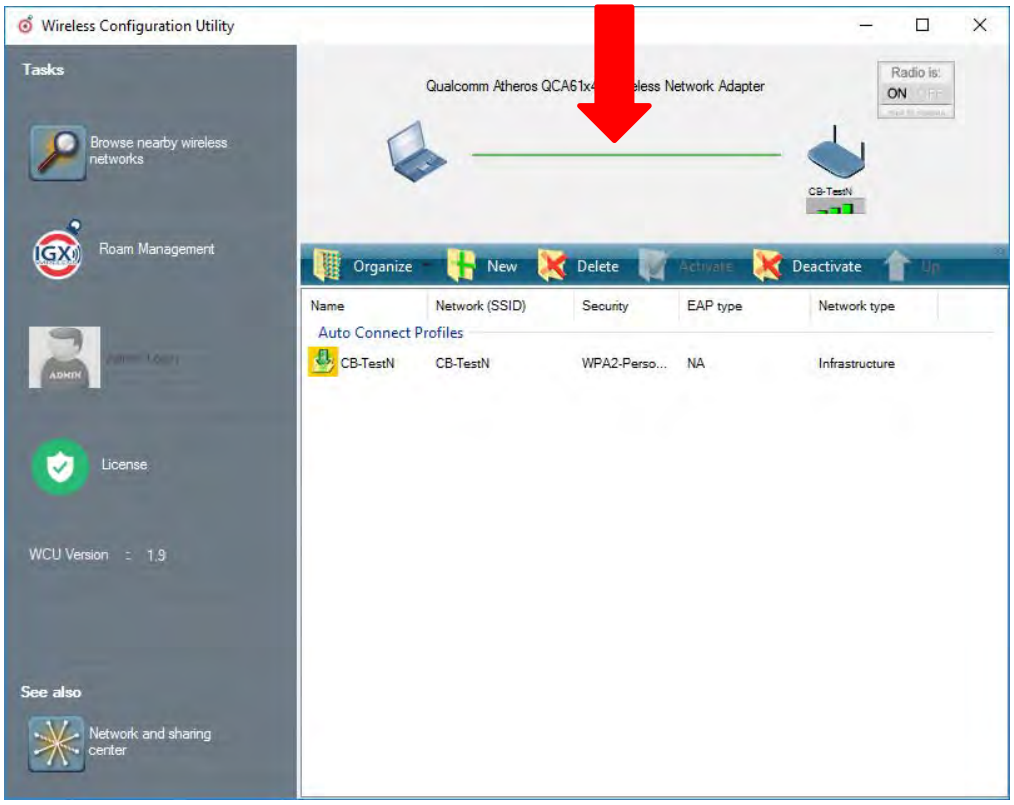


Fig.9.24: Network connection is established

9.6.10. Roam Management

9.6.10.1. General

After clicking the **General** dialog, the following information is displayed on the screen:

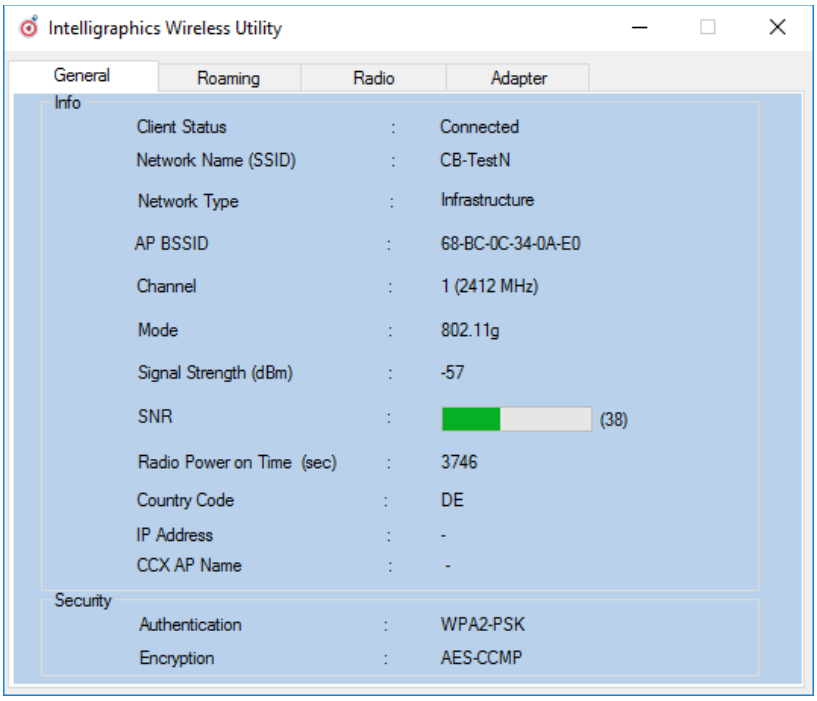


Fig.9.25: General dialog in the Roam Management menu

General

Info	Meaning of the display
Client Status	Current connection status **Connected / Disconnected**
Network Name SSID	SSID of the currently connected access points
Network Type	Network type **Ad-hoc** or **Infrastructure**
AP BSSID	Corresponding MAC address of the currently connected access points
Channel	Displays the configured channel used in the access point
Mode	Frequency band used, e.g. "802.11g"
Signal Strength (dBm)	Current signal strength of the connected access points in (dBm)
SNR	Relative signal strength (SNR) as bar chart
Radio Power on Time (sec)	Display of the current elapsed operating time of the Radio card
Country Code	The country code supplied by the access point such as US, DE, JP
IP Address	The Client IP address configured by the access point (DHCP) or manually (static) assigned
CCX AP Name	SSID of the Cisco CCX Access Points (if present)

Security

Authentication	The authentication process used, e.g. **WPA2-PSK (Pre-Shared-Key)**
Encryption	Display of the corresponding encryption process, e.g. **(AES-CCMP, TKIP)**

9.6.10.2. Roaming

The **Roaming** dialog is used to define the following parameters:

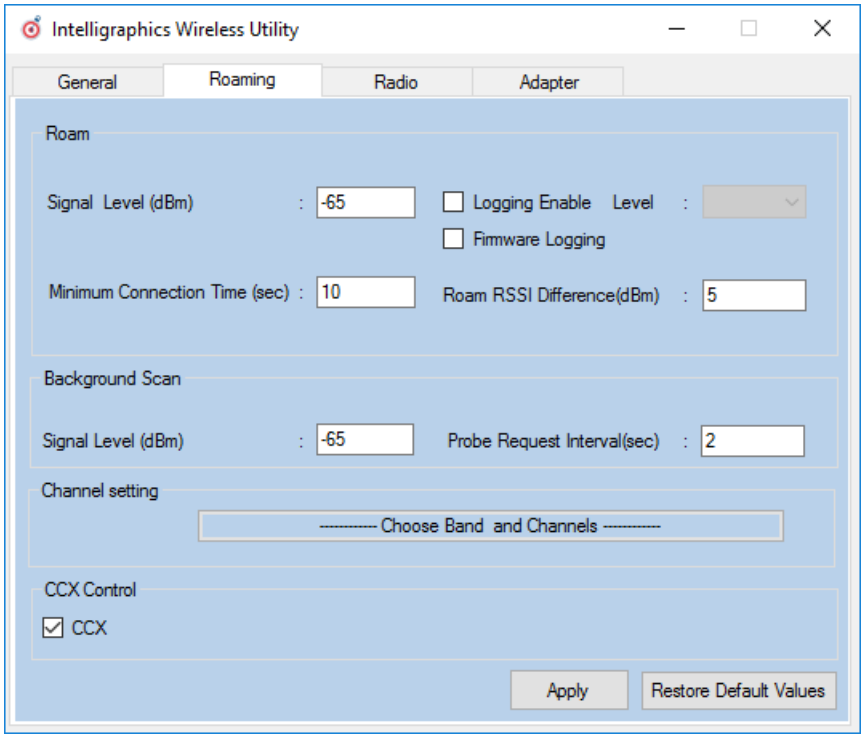


Fig.9.26: Roaming dialog in the Roam Management menu

Roam

Signal Level (dBm):	This setting defines when the client is to be begin the roaming process. Possible values: -55 dBm to -80 dBm Default value: -65 dBm (adjustable in 5 dBm increments)
Minimum Connection Time (sec)	This setting defines how long the client is to remain connected to the current access point before roaming to the new access point starts. Possible values: 5 to 25 seconds Default value: 10 seconds
Logging Enable Level	This setting can be used to define that the activities of the driver are recorded in a log. Two levels are available: **Critical** and **All**. **Critical**: If the debug level is set to **Critical**, only the critical messages from the driver will be recorded. **All**: If the debug level is set to **All**, all messages from the driver will be recorded. The log file is saved in the **C:\WlanLogs** folder and a current

	timestamp is added. If the log file is larger than 100 mb, a new file is created. Note: This option should only be enabled for short periods for analysis purposes, not permanently!
Firmware Logging	Option can be enabled to create a "Firmware" log. The log file is saved to the **C:\WlanLogs** folder and is assigned the current timestamp and the extension **_fw**. If the log file is larger than 100 mb, a new file is created. Note: This option should only be enabled for short periods for analysis purposes, not permanently!
Roam RSSI Difference (dBm)	The client will not connect to the new access point until the defined RSSI difference between the new visible access point and the currently connected access point is reached. Possible values: 5 dBm to 25 dBm Default value: 5 dBm

Background Scan

Signal Level (dBm)	This setting defines when the client is to begin the background scan. Possible values: -55 dBm to -80 dBm Default value: -65 dBm
Probe request interval	This setting is used to define how frequently the probes are to be sent when the client is in the "Connected" status. The minimum value here is 1 second. The maximum value is 10 seconds. Each scan process (repetition) takes 4 to 5 seconds.

Clicking the **Choose Band and Channels** button opens the following dialog:

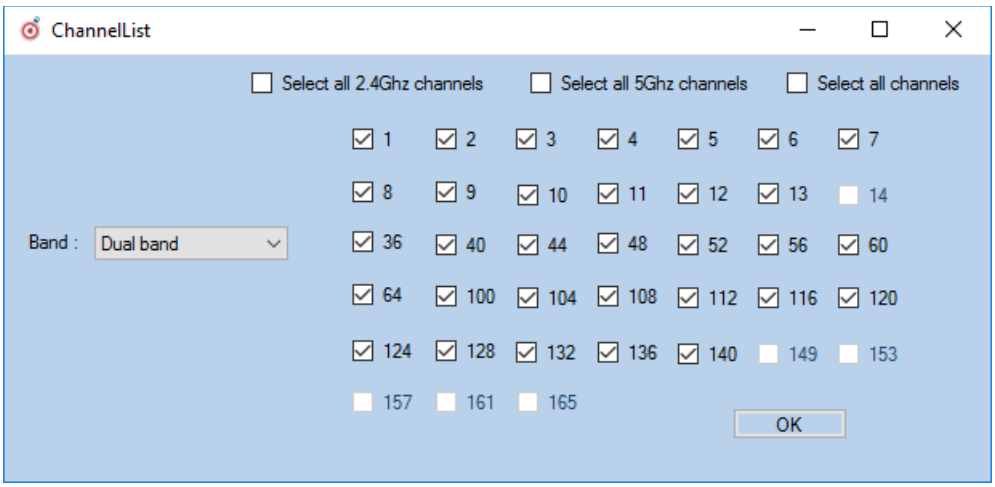


Fig.9.27: Roam Management – Choose Band and Channels

Channel List

Select all 2.4Ghz channels	This option can be used for simultaneous pre-selection of all 2.4 GHZ channels 1 to 13 supported by the Wi-Fi driver. Modifications to individual channels can be carried out at any time by clicking the checkboxes for each channel. **NOTICE**: Country-specific channel settings / residual restrictions on the use of special channels should be set according to the legal guidelines and must be observed!
Select all 5Ghz channels	This option can be used for simultaneous pre-selection of all 5 GHZ channels 36 to 140 supported by the Wi-Fi driver. Modifications to individual channels can be carried out at any time by clicking the checkboxes for each channel. **NOTICE**: Country-specific channel settings / residual restrictions on the use of special channels should be set according to the legal guidelines and must be observed!
Select all channels	Used to select or de-select the complete channel list 2.4/5 GHZ (to simplify channel selection).
Band	The following selection options are available: – 2.4 GHz – 5 GHz – Dual band (2.4 GHz and 5 GHz) The corresponding settings mean that only channels occurring in the frequency band are displayed for selection and de-selection.

CCX Control

CCX / CCKM	The CCX specification (Cisco®Compatible eXtensions) contains a series of functional extensions to the IEEE 802.11 Wi-Fi standard to support rapid roaming (CCKM): with improved security, reliability and diagnostic performance. The CCX specification is a brand from Cisco® and requires a license agreement to be able to equip mobile devices with this technology. Currently the CCX versions 4 (CCXv4) and 5 (CCXv5) are supported.

9.6.10.3. Radio Tab

The **Radio** dialog is used to define the following parameters:

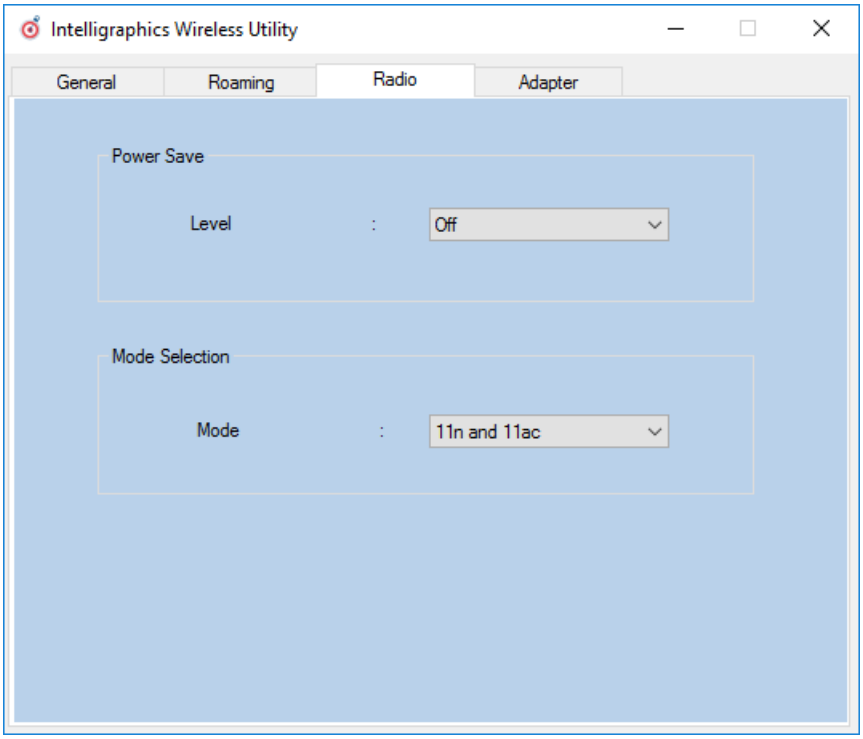


Fig.9.28: Radio dialog in the Roam Management menu

Power Save	The Power Save Level is set. The levels **OFF** and **Auto-PSM** are available.
Mode Selection	The band of the client is specified. The possible options are: **11n and 11ac / 11n / 11a/b/g**

9.6.10.4. Adapter Tab

After clicking the **Adapter** dialog, the following information is displayed on the screen:

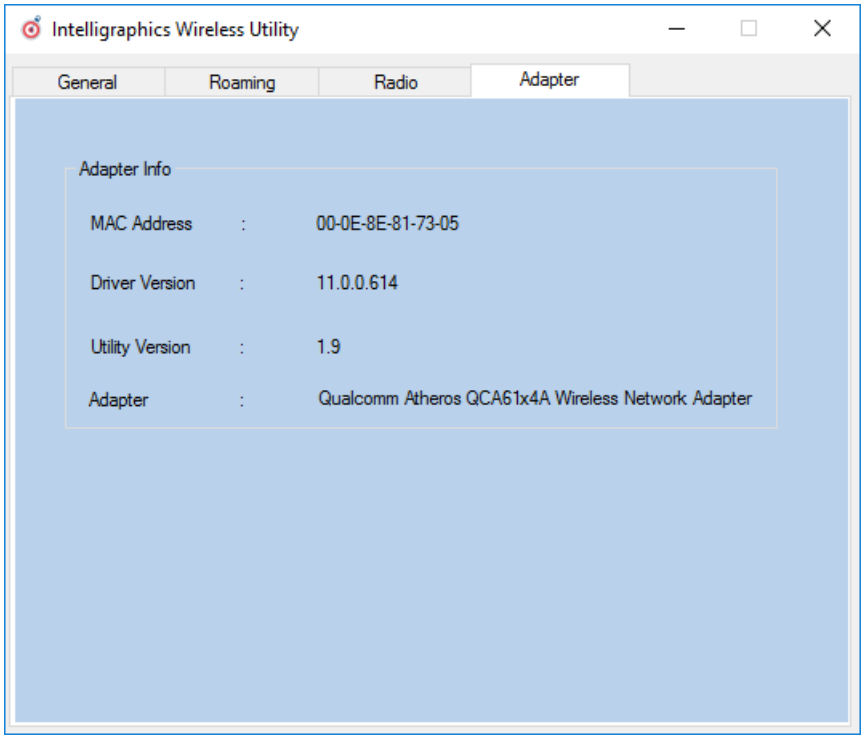
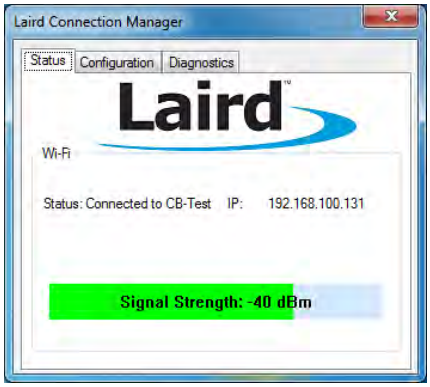


Fig.9.29: Adapter Tab in Roam Management menu

9.6.11. Laird Connection Manager (LCM)

Start LCM:

- ⇨ By clicking the **LCM** icon on the desktop
- ⇨ Or by choosing **Start > Programs > Summit > Laird Connection Manager**.

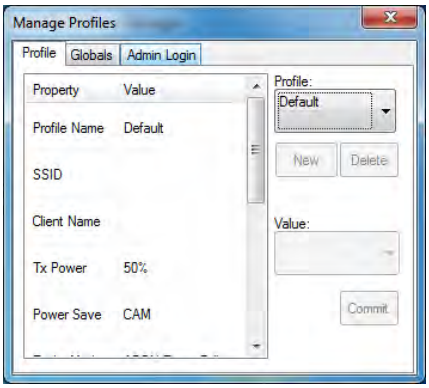


- ⇨ Depending on the configuration, you may have to enter a password.
- ⇨ To do this, click **Configuration**.

Fig. 9.30: Initial Laird Connection Manager dialog box

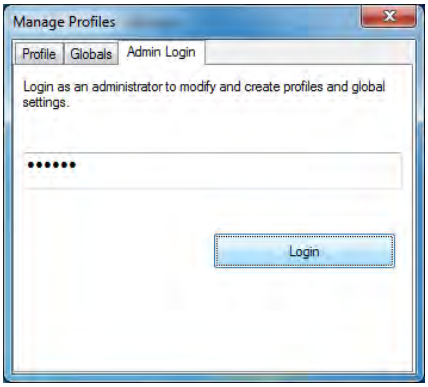
⇨ Click on **Manage Profiles**.

Fig. 9.31: LCM Configuration tab with the Manage Profiles button



⇨ Click the **Admin Login** tab.

Fig. 9.32: LCM Manage Profiles dialog box with the Admin Login tab



⇨ Default password: **SUMMIT**
(Must be entered in upper-case characters.)

Fig. 9.33: Entering the LCM password: SUMMIT

10. WWAN configuration

10.1. Safety notice

CAUTION

Danger of radiation emission.

DLT-V72 devices with radio technology emit high frequency energy (abbreviation: HF). To protect persons against HF radiation:

- ⇨ Mount the DLT-V72 so that persons and domestic animals maintain a minimum distance of 20 to 50 cm from the radio antennas.
- ⇨ Ensure that persons observe this minimum distance when operating the DLT-V72.
- ⇨ High frequency energy can interfere with technical devices. For this reason, do not use the DLT-V72 in the vicinity of pacemakers or other medical devices.
- ⇨ Only operate the DLT-V72 with radio modules that are approved by the manufacturer for this device.
- ⇨ Make sure that the transmission power and the radio frequency of the DLT-V72 comply with the regulations for the respective country where the device is deployed.
- ⇨ 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-V72. The regulatory authorities in the relevant country can provide information on this.

Any modifications to the DLT-V72 which are not expressly approved by the party responsible for the compliance can lead to the withdrawal of the operating license for this device.

Examples of country-specific regulations:

Region:	Radio approval:
EU	RED (formerly R&TTE)
China	SRRC
Japan	MIC (formerly TELEC)
Taiwan	NCC
Canada	Canada IC
USA	FCC

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 (300 Mbps if using IEEE 802.11n) 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:

12. Radio card (set transmission power)
13. Connecting cables
14. 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

10.2. Differences between MS Windows and Linux

The radio configuration of the DLT-V72 with MS Windows operating system is described in the following manual sections.

The radio configuration of the DLT-V72 with Linux is described in the “Advantech Linux Manual”.

Please contact our Technical Customer Support if required.

10.3. Preparation work at the factory (DLT-V72 delivery status)

The following preparations have already been carried out at the factory for the optional WWAN functionality of the DLT-V72:

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

NOTICE: Property damage

No access to radio cards in the DLT-V72

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.

10.4. SIM card for WWAN (customer-specific)

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-V72 antenna:

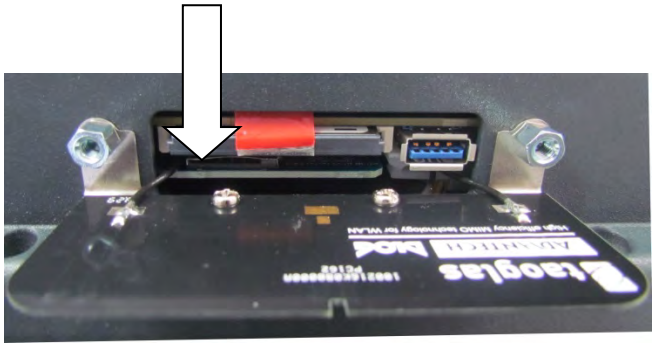


Fig. 10.1: Sim card slot underneath the DLT-V72 antenna

NOTICE: Property damage

Inserting the SIM card: DLT-V72 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.

10.5. Configuration of radio card SIERRA WIRELESS MC80

The following information applies for the radio card **SIERRA WIRELESS MC80**. Its precise designation is:

- USA: SIERRA WIRELESS MC8090
- Europe: SIERRA WIRELESS MC8092

The WWAN configuration is identical for both Radio cards. For this reason, the abbreviation **SIERRA WIRELESS MC80** is used.

NOTE

In the section below, the provider **Vodafone** is used as an example.

⇨ Adjust the settings for your provider.

10.5.1. Open device manager

⇨ Check whether or not the **Sierra Wireless HSPA Modem** is present in the list of modems.

Fig. 10.2: SIERRA WIRELESS MC80 - Device manager, Sierra Wireless HSPA Modem

⇨ Display the **Properties** window of the **Sierra Wireless HSPA Modems** (left mouse button).

⇨ Click the **Advanced** tab.

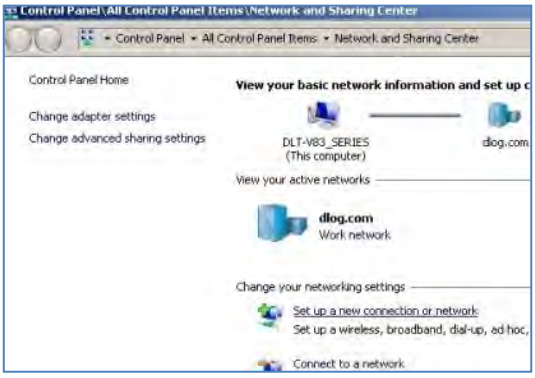
⇨ In the **Advanced** tab, enter the APN of the provider:

e.g. +CGDCONT=1,"IP**","web.vodafone.de"**

⇨ Then click **OK**.

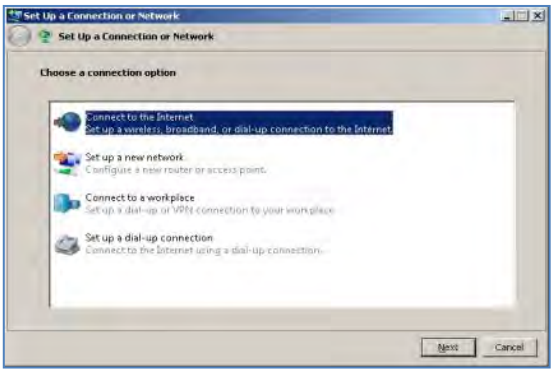
Fig. 10.3: SIERRA WIRELESS MC80 - Sierra Wireless HSPA Modem - Properties

10.5.2. Establish Internet connection



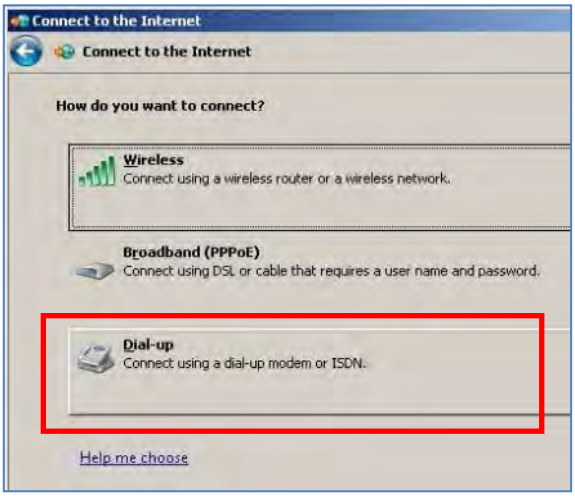
- ⇨ Open the **Network and Sharing Center**.
- ⇨ Click **Set up a new connection or network**.

Fig. 10.4: SIERRA WIRELESS MC80 - Set up a new connection or network



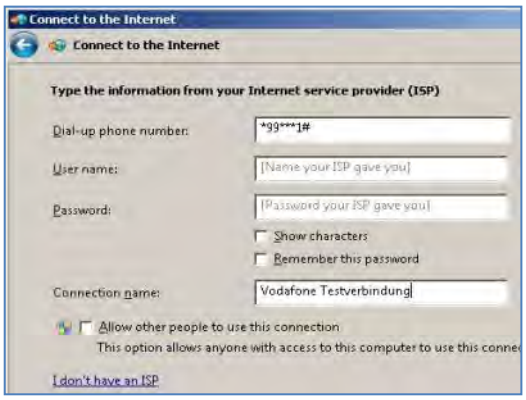
- ⇨ **Connect to the Internet** - select and confirm.

Fig. 10.5: SIERRA WIRELESS MC80 - Connect to the Internet



- ⇨ Select the **Dial-up** field.

Fig. 10.6: SIERRA WIRELESS MC80 - Connect to the Internet - Dial-up



- ⇨ Specify as a telephone number, e.g. ***99***1#**.
- ⇨ Enter a connection name, e.g. **Vodafone test connection**.
- ⇨ Username and password are not required in the example (provider-dependent).

Fig. 10.7: SIERRA WIRELESS MC80 - Telephone number and connection name

⇨ Open the Vodafone test connection under **Network connections**.

Fig. 10.8: SIERRA WIRELESS MC80 - Network connections - Vodafone test connection

- ⇨ Do not enter a user name or password.
- ⇨ Click **Dial**.

  The test connection is established.

Fig. 10.9: SIERRA WIRELESS MC80 – Dial test connection

In the **Network and activation center** of the device, the status of the test connection can be tested:

⇨ Right-click the network and then select **Status**.

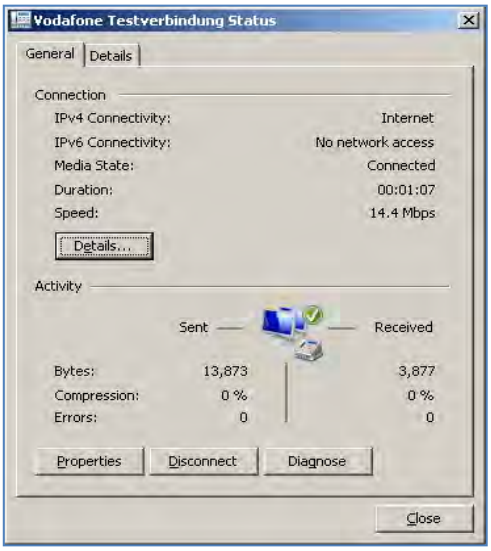


Fig. 10.10: SIERRA WIRELESS MC80 - Function test GSM / GNSS, test connection status

10.5.3. SIERRA WIRELESS MC80 Trouble Shooting

10.5.3.1. Testing the virtual COM ports for Wireless card SIERRA WIRELESS MC80

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.

DLT-V72 with D525 processor:

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

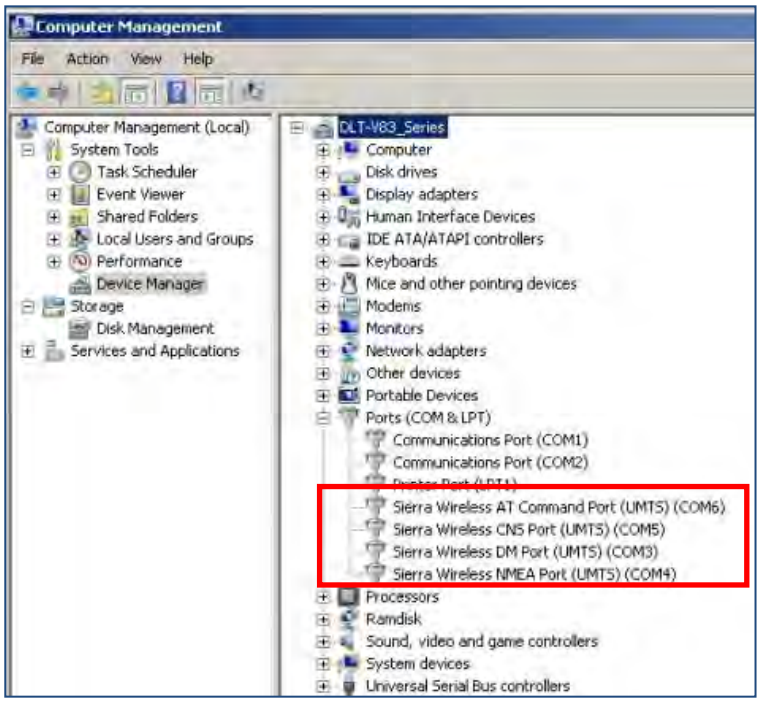


Fig. 10.11: SIERRA WIRELESS MC80 - Virtual COM ports DLT-V72 with D525 processor

DLT-V72 with i5 processor:

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

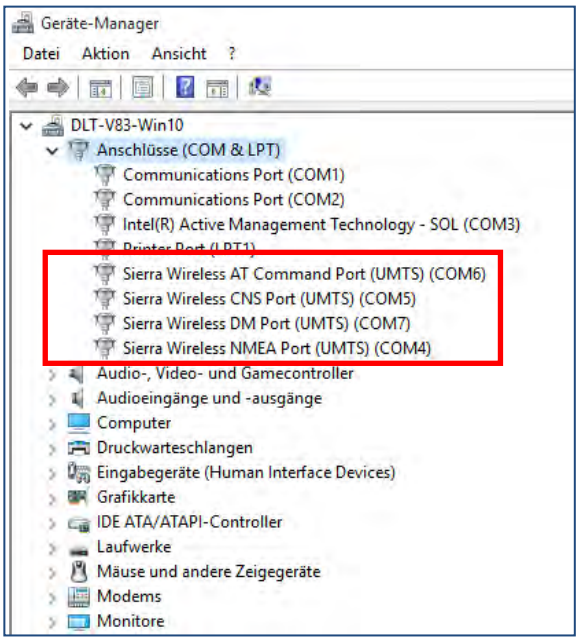


Fig. 10.12: SIERRA WIRELESS MC80 - Virtual COM ports DLT-V72 with i5 processor

DLT-V72 with Celeron processor:

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

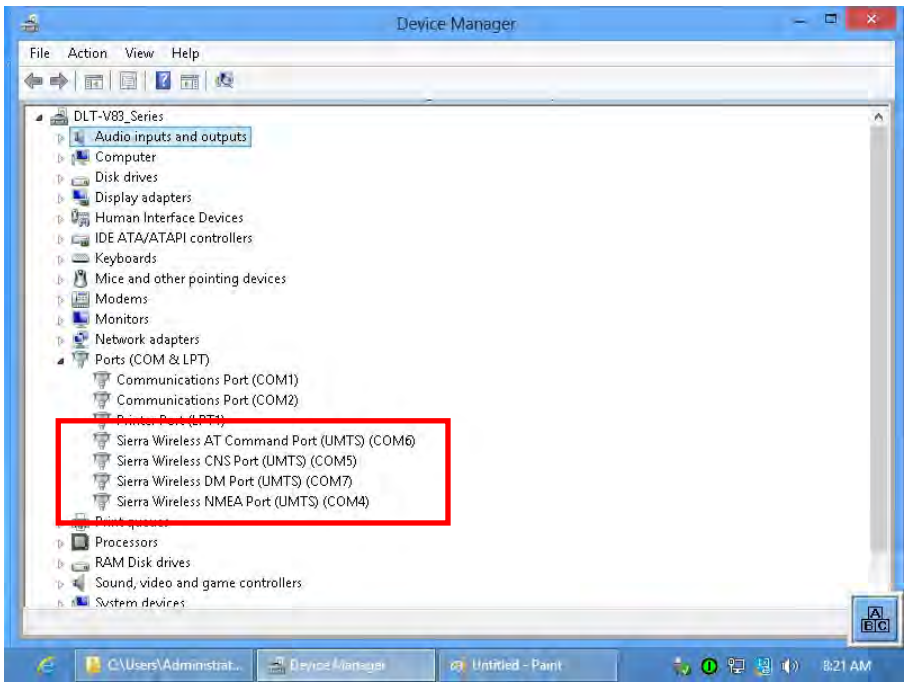


Fig. 10.13: SIERRA WIRELESS MC80 - Virtual COM ports DLT-V72 with Celeron processor

10.5.3.2. Test communication between DLT-V72 and WWAN Radio card

The open source software **Tera Term**, for example, can be used to test that the DLT-V72 can communicate with the Radio card.

This software can be downloaded from the following URL, for example (website available at time of writing this operating manual, dated Feb 2019):

https://www.heise.de/download/product/tera-term-51776

Perform the following steps:

- ⇨ Open the AT port via **Tera Term**.
- ⇨ Connect to the AT port.
- ⇨ In the AT port, enter the command **AT**.

If the response received is **OK**, communication is present.

10.5.3.3. Test that GNSS data can be received

The open source software **Tera Term**, for example, can be used to test that GNSS data can be received. Availability of the software: see previous section.

Perform the following steps:

- ⇨ Open the NMEA port via **Tera Term**.
- ⇨ Test that NMEA data are received.
  Enabled data flows are displayed.

Example:

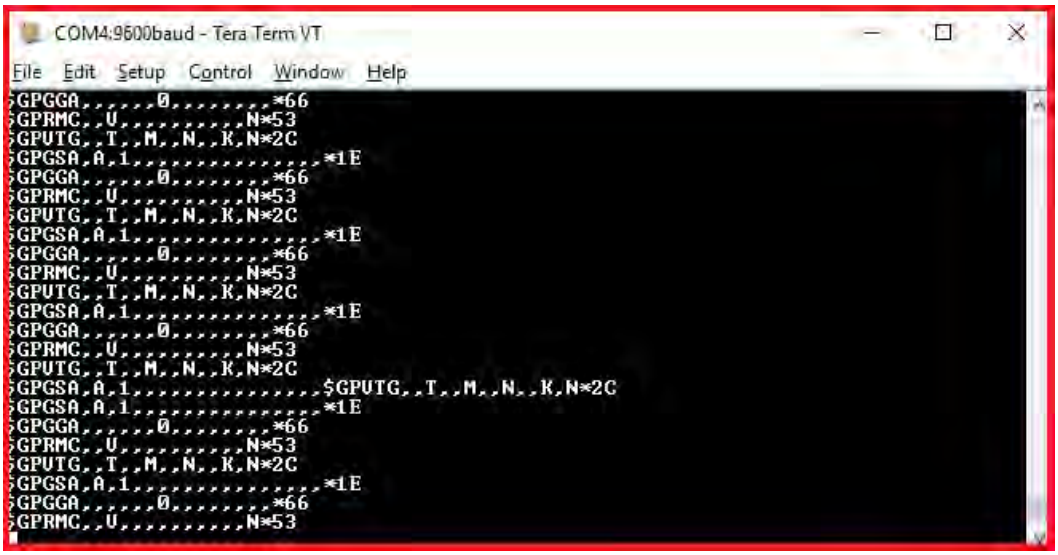


Fig. 10.14: SIERRA WIRELESS MC80 - test NMEA data flows

10.6. Configuration of Radio card QUECTEL EC25

The following information is valid for the Radio card **QUECTEL EC25**. Its precise designation is:

15. USA: QUECTEL EC25A or EC25V
16. Europe: QUECTEL EC25E

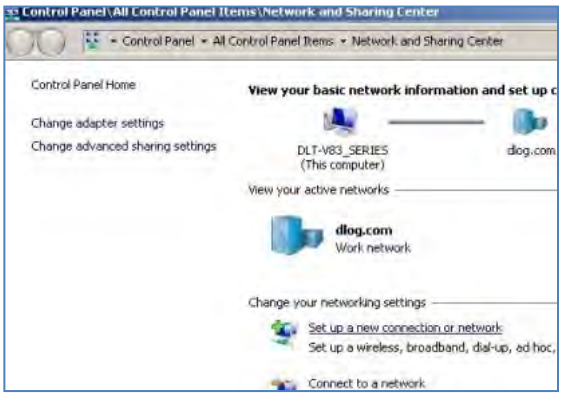
The WWAN configuration is identical for both Radio cards. For this reason, the abbreviation **QUECTEL EC25** is used.

10.6.1. Establish Internet connection

NOTE

In the section below, the provider **Vodafone** is used as an example.

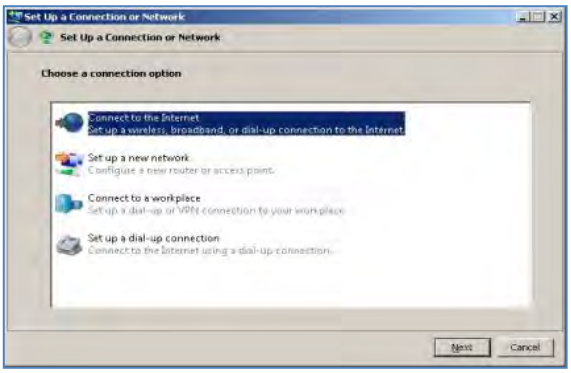
⇨ Adjust the settings for your provider.



⇨ Open the **Network and Sharing Center**.

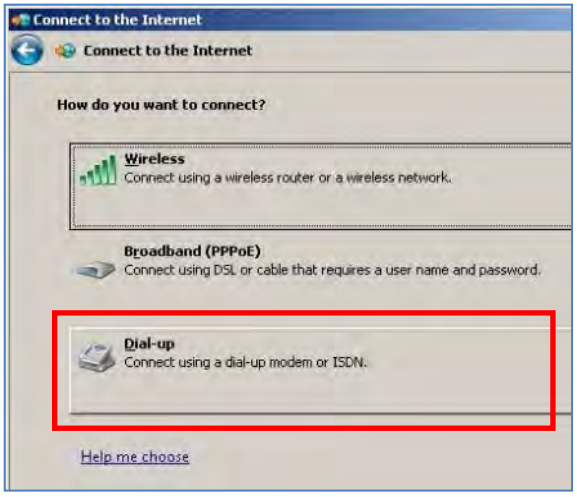
⇨ Click **Set up a new connection or network**.

Fig. 10.15: QUECTEL EC25 - Set up a new connection or network



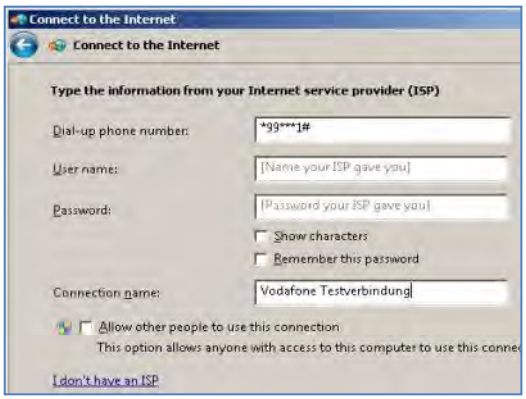
⇨ **Connect to the Internet** - select and confirm.

Fig. 10.16: QUECTEL EC25 - Connect to the Internet



⇨ Click **Dial-up**.

Fig. 10.17: QUECTEL EC25 - Connect to the Internet - Dial-up



⇨ Specify as a telephone number, e.g. ***99***1#**.

⇨ Enter a connection name, e.g. **Vodafone test connection**.

⇨ Username and password are not required in the example. (Provider-dependent)

Fig. 10.18: QUECTEL EC25 - Connect to the Internet - Telephone number

⇨ Open the Vodafone test connection under **Network connections**.

Fig. 10.19: QUECTEL EC25 - Network connections - Vodafone test connection

⇨ Do not enter a user name or password.

⇨ Click **Dial**.

The test connection is established.

Fig. 10.20: QUECTEL EC25 - Dial Vodafone test connection

In the **Network and activation center** of the device, the status of the test connection can be tested:

⇨ Right-click the network and then select **Status**.

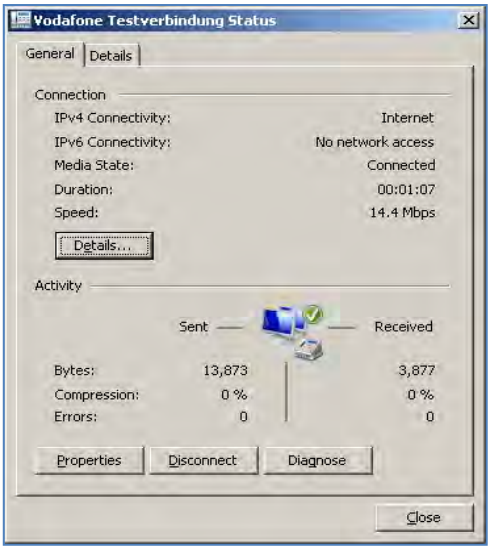


Fig. 10.21: QUECTEL EC25 - Function test GSM / GNSS, test connection status

10.6.2. QUECTEL EC25 Trouble Shooting

10.6.2.1. 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.

DLT-V72 with i5 processor

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

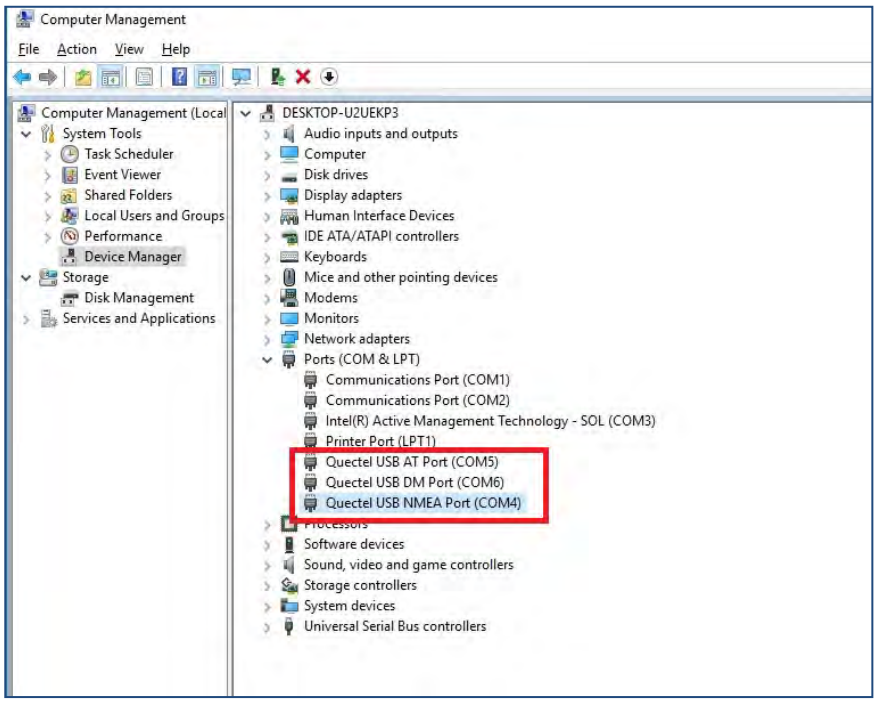


Fig. 10.22: QUECTEL EC25 - Virtual COM ports DLT-V72 with i5 processor

DLT-V72 with Celeron processor

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

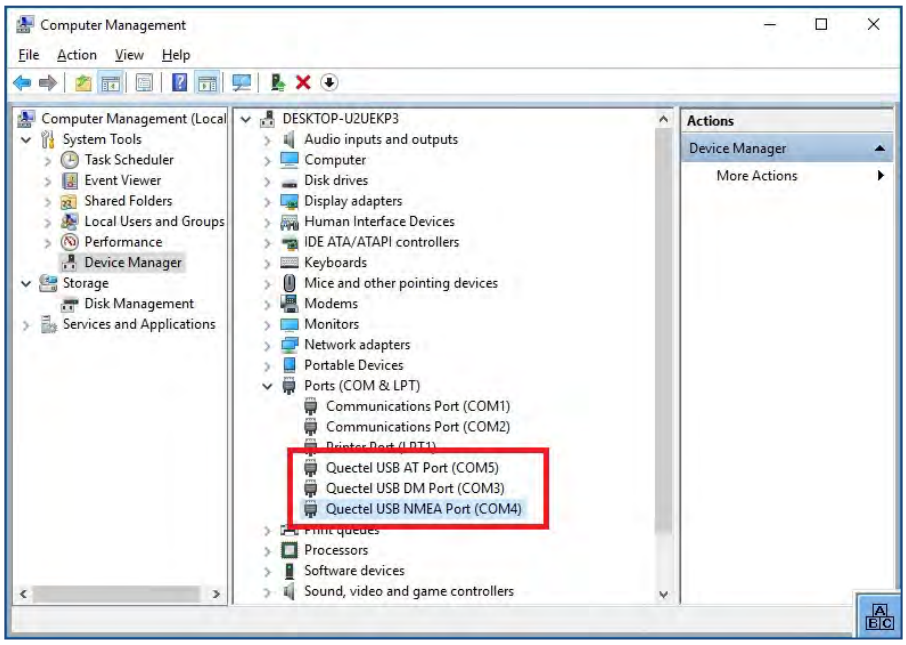


Fig. 10.23: QUECTEL EC25 - Virtual COM ports DLT-V72 with Celeron processor

10.6.2.2. Test communication between DLT-V72 and WWAN Radio card

The open source software **Tera Term**, for example, can be used to test that the DLT-V72 can communicate with the Radio card.

This software can be downloaded from the following URL, for example (website available at time of writing this operating manual, dated Feb 2019):

https://www.heise.de/download/product/tera-term-51776

Perform the following steps:

- ⇨ Open the AT port via **Tera Term**.
- ⇨ Connect to the AT port.
- ⇨ In the AT port, enter the command **AT**.

If the response received is **OK**, communication is present.

10.6.2.3. Test that GNSS data can be received

The open source software **Tera Term**, for example, can be used to test that GNSS data can be received. Availability of the software: see previous section.

Perform the following steps:

⇨ Open the NMEA port via **Tera Term**.

⇨ Test that NMEA data are received.
Enabled data flows are displayed.

Example:

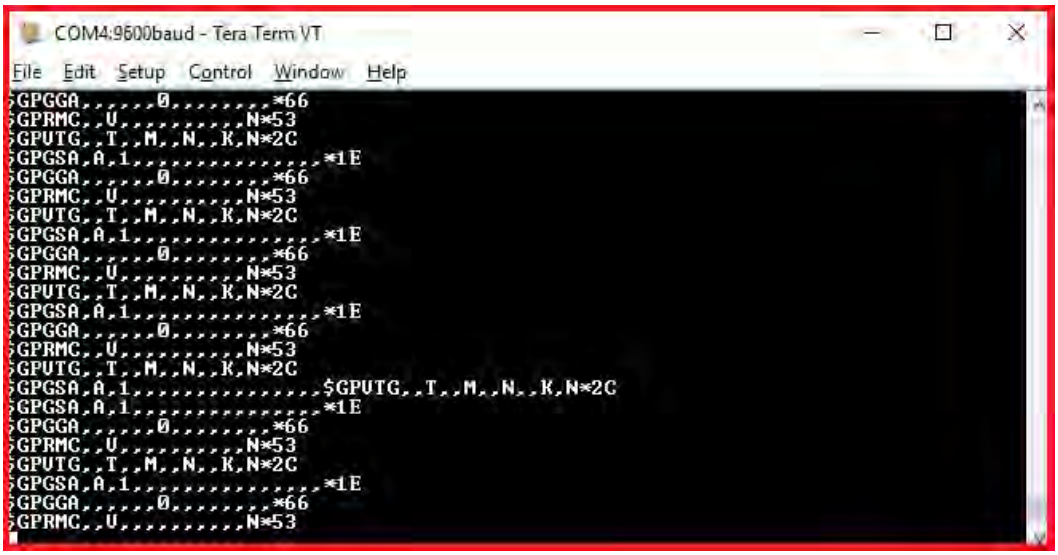


Fig. 10.24: QUECTEL EC25 - Test NMEA data flows

11. Mechanical installation

Recommend sequence for the mechanical installation

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

- Determine a suitable mounting position for the DLT-V72.
- Secure device mounting at the vehicle (RAM Mount etc.).
- Connect external accessories to the DLT-V72.
- Install an easily accessible disconnecting device, such as a switch close to the device.
- Connect all cables.
- Close the DLT-V72 with cable cover.
- Mount the DLT-V72 on the device mounting bracket.

11.1. Safety notice – observe before installing

WARNING

Risk of injury and damage due to improper mechanical installation.

These mounting instruction are directed to skilled personnel. Only qualified skilled personnel may perform the mechanical installation work on the DLT-V72.

If the DLT-V72 is incorrectly mounted, any Advantech warranty for this device will be void.

The mounting of the DLT-V72 must not endanger the safety of the operating personnel.
Example: When mounting to forklifts, the driver's field of view must remain free.

Hazardous voltage, electric shock from contact with live parts.

⇨ Do not put the DLT-V72 into operation if it is visibly damaged.

⇨ Do not open or modify the DLT-V72.

Risk of injury due to weight and sharp-edged parts.

The DLT-V72 can fall down and cause injuries due to its weight.
The strain relief rail can have sharp edges and cause cutting injuries.

⇨ Always hold the DLT-V72 by the housing with both hands.

⇨ Never use the antenna as a handle. It can break due to the weight involved.

⇨ Do not hold the DLT-V72 by the strain relief rail.

Use the assistance of a second person for installation work.

NOTICE: Physical damage

Damage and scratching of the touchscreen without transport protective film.

The front display of the DLT-V72 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.

11.2. Mounting the DLT-V72 at the deployment location

Stationary or on vehicles

WARNING

Risk of injury and damage due to improper deployment location.

⇨ Observe the intended use of the DLT-V72, e.g. not in potentially explosive areas, not in life-supporting facilities.

⇨ Ensure that the deployment location of the DLT-V72 complies with the permissible environmental conditions.

Risk of accident on vehicles due to unstable attachment of the DLT-V72.

⇨ When installing the DLT-V72, make sure that if the bracket breaks (e.g. because of a stress fracture) no one will be injured.

⇨ Alternatively please put appropriate safety measures in place (e.g. install a security cable in addition to the mounting bracket).

Radio wave emission in the vicinity of persons.

To ensure that the limits set for exposure to radio waves are not exceeded:

⇨ Install the DLT-V72 so that persons maintain a minimum distance of 20 to 50 cm to the antenna.

DANGER

Risk of accident on vehicles due to unexpected vehicle emergency stop because of electro-conductive connection of the DLT-V72 to the vehicle chassis.

Due to a variety of technical properties of forklifts and forklift trucks, it can be necessary to electrically isolate DLT-V72 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.
- ⇨ 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. Moreover, the peripheral equipment and its cabling must be attached electrically isolated.
- ⇨ If external antennas are being used, you must ensure that the antennas are isolated at the mounting point on the vehicle chassis.

NOTICE: Physical damage

Installation environment without cooling air can overheat/damage the DLT-V72.

The DLT-V72 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.

11.3. Attaching accessories to the DLT-V72

For example: mounting bracket, scanner mounting

ATTENTION: Physical damage

Only use mounting brackets, accessories and mounting materials that have been tested and approved for the respective DLT-V72. Otherwise, any warranty for this device will be void.

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

11.3.1. VESA mounting hole pattern

The rear side of the DLT-V72 has a VESA-compatible mounting hole pattern with 75 x 75 mm for a RAM Mount bracket or swivel mounting.

Screw-in depth VESA mounting hole pattern: M6 x 6 mm

Suitable mounting material:

- Cylinder-head screws int.hex DIN912 M6
- Washers ISO 8738 (DIN 1440)-A6-A2

Fig. 11.1: VESA mounting hole pattern on the rear side of the DLT-V72

WARNING

Risk of accident during vehicle operation if the mounting of the DLT-V72 becomes loose and breaks while driving.

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

- Special **mechanical knowledge** is required for correct mounting!
- Use suitable mounting material.
- Use suitable screws: Screws that are too long can penetrate the back of the DLT-V72 and cause irreparable damage. Screws that are too short do not provide secure mounting.
- Use suitable washers.
- 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).
- If you ordered a bracket from Advantech, it includes the suitable screws and washers. Please use them (see examples).

Examples for RAM Mount Set mounting materials

RAM Mount Set short (arm length, 130 mm)	RAM Mount Set long (arm length 215 mm)
Fixing plate RAM Mount VESA	Fixing plate RAM Mount VESA
Mounting bracket VESA	Mounting bracket VESA
Washer spring A6 DIN128 FSt galvan.	Washer spring A6 DIN128 FSt galvan.
Cylinder-head screws int.hex DIN912 M6x16 V2A	Cylinder-head screws int.hex DIN912 M6x16 V2A
Washer ISO 8738 (DIN 1440)-A6-A2	Washer ISO 8738 (DIN 1440)-A6-A2

11.3.2. Attach the mounting bracket

The housing of the DLT-V72 has holes provided for attaching an mounting bracket.

Fig. 11.2: Advantech mounting bracket on the DLT-V72

Screw-in depth: M6 x 6 mm

Suitable mounting material:

- Cylinder head screws DIN912 M6
- Washers DIN 125 - A 6.4

WARNING

Risk of accident during vehicle operation if the mounting of the DLT-V72 becomes loose and breaks while driving.

Please observe the following when attaching the Advantech mounting bracket:

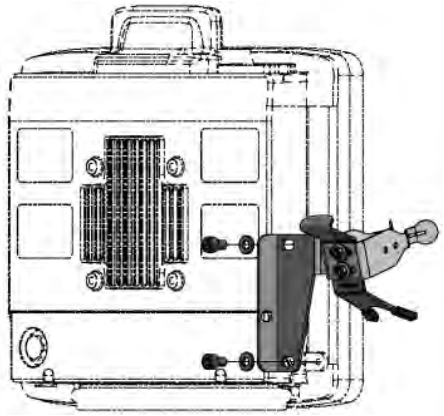
- Special **mechanical knowledge** is required for correct mounting!
- Use suitable mounting material (screws and washers).
- Observe the maximum screw-in depth of the holes of the DLT-V72: The recommended screw-in depth of Dx1 always applies (screw diameter x 1).

11.3.3. Attach the Advantech accessories

The housing of the DLT-V72 has holes provided for attaching an Advantech accessory.

Example:

Fig. 11.3: Scanner mounting attachment



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

Installation sequence if Advantech mounting bracket and additional accessory are being attached

If you are mounting an Advantech mounting bracket and a keyboard holder:

- Attach the mounting bracket to the DLT-V72 first.
- Then mount the keyboard holder.
- Only mount the complete system at the deployment location, e.g. to the forklift.

Please note: In addition to the mounting bracket, one accessory holder per side can still be attached in each case.

12. Electrical installation, cable connection, cable cover

12.1. Safety notice – observe before connecting

WARNING

Risk of injury and damage due to improper electrical installation.

These instructions are directed to skilled personnel.

- ⇨ Only qualified skilled personnel are permitted to perform the electrical installation of the DLT-V72.
- ⇨ Comply with the appropriate national installation regulations for any and all cable routing.

Electrical shock due to insufficient EMERGENCY shut-off of the vehicle.

If the EMERGENCY-OFF switch of the vehicle does not switch off the DLT-V72, there is a risk of electrical shock.

- ⇨ Install the DLT-V72 and the EMERGENCY-OFF switch so that the DLT-V72 also switches off when the EMERGENCY-OFF switch is operated.
- ⇨ Important: If a DLT-V72 with integrated UPS is installed in a vehicle, the EMERGENCY-OFF switch of the vehicle has no effect on the DLT-V72. This also applies to the peripherals supplied by the device.

Deployment location fueling stations, chemical plants.

The operation of electrical equipment at locations where flammable gases or vapors are present poses a safety hazard.

- ⇨ Turn off the DLT-V72 when you are near gas stations, fuel depots, chemical plants or places where blasting operations take place.

NOTICE: Physical damage

Overvoltage on the DLT-V72 when charging the vehicle battery.

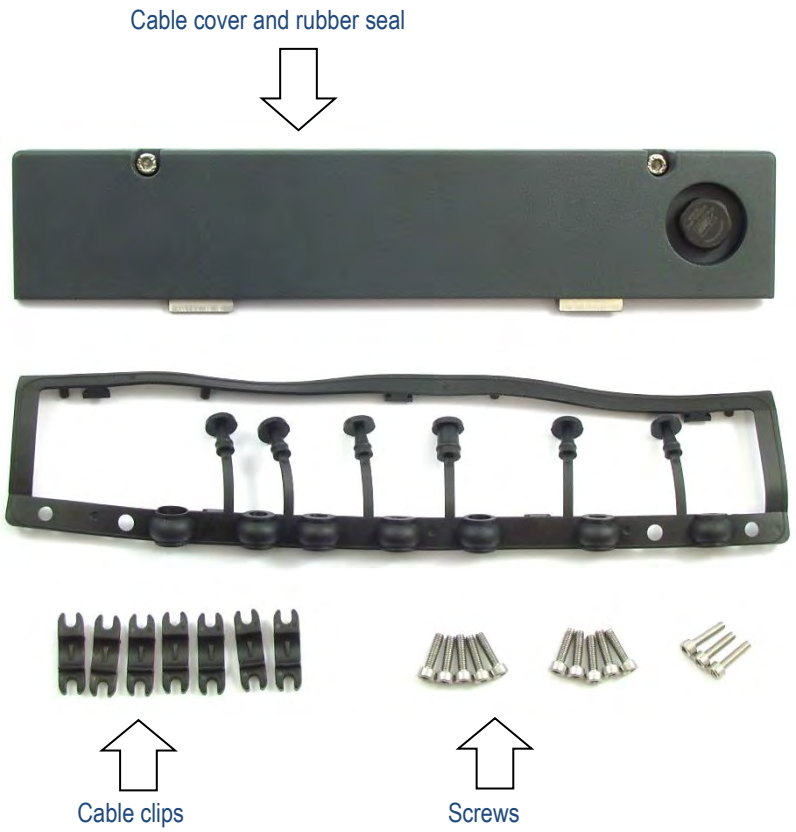
The DLT-V72 must be disconnected from the vehicle battery while the vehicle battery is being charged. Or it must be ensured that the maximum permitted input voltage of the DLT-V72 is not exceeded.

12.2. Preparations

- ⇨ Lay out ready all cables that are to be connected to the DLT-V72.
- ⇨ Select the appropriate slots on the connector panel of the DLT-V72.
- ⇨ Test in which order the cables best fit in the cable compartment.

12.2.1. Material required

Cable sealing set (scope of delivery: cable cover)



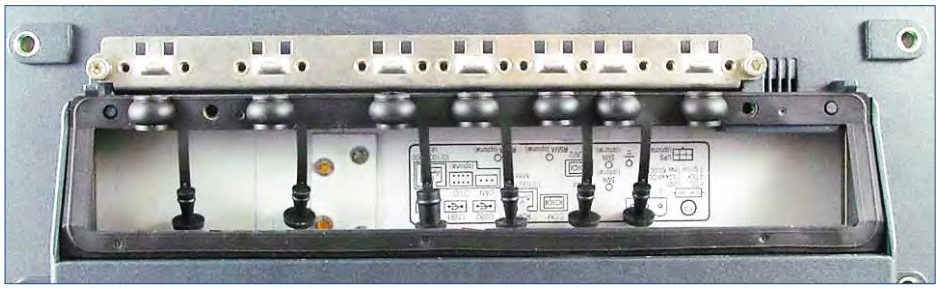
Tools

- Hexagon screwdriver, size 3
- Philips screwdriver, size 3
- Torque wrench
- Allen wrench, size 2.5
- Flat head screwdriver, size 0
- Socket wrench, size 7

12.3. Inserting the rubber seal in the cable compartment

- ⇨ Place the rubber seal in the frame of the cable compartment (see figure).
- ⇨ Press the plugs of the rubber seal into the holes of the frame.

Fig. 12.1: Rubber seal inserted in the cable compartment



WARNING

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

- ⇨ Use only original Advantech power cables; these meet the specific requirements for low-temperature flexibility, UV resistance, oil resistance, etc.
- ⇨ Make sure that the power supply cables are run without kinks and are protected (securely protected against crushing and abrading).
- ⇨ The DLT-V72 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.
- ⇨ The DC+ connecting cable must be protected by a fuse (30 AT max.).
- ⇨ 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.
- ⇨ Observe correct voltage ranges.
- ⇨ Ensure that power supply cables are fused correctly.
- ⇨ Read the labeling on the cable and connect the power supply cable with the correct polarity.
- ⇨ Cut the supply cable to the minimum length. This avoids tangled cables and improves the quality of the power supply.
- ⇨ 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.

NOTICE: Physical damage

Observe the potential ratios.

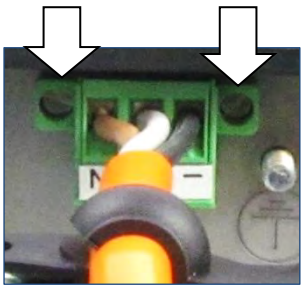
On the DLT-V72, the logic ground and the shield ground are firmly connected to each other. Logic ground is the ground (GND) used to supply the internal parts and components such as the display or CPU. All cable shields and the housing are connected to shield ground.

The chassis of some forklifts is on DC+. This means that the DLT-V72 chassis is also on DC+. Short circuits can arise when, for example, the ground potential of a peripheral device is on DC-. This may cause malfunctions or irreparable damage to the DLT-V72.

- ⇨ Always attach ring tongue of the supply voltage cable to the provided ground bolt situated on the connector panel.
- ⇨ The other end of the yellow-green power supply cable must be connected to the vehicle's chassis.
- ⇨ Connect the power supply cable of the DLT-V72 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.
- ⇨ Connecting the DLT-V72 to large electrical loads, such as converters for the forklift motor may result in random restarts, malfunctions and/or irreparable damage to the device.
- ⇨ If you want to connect devices fed by other power sources to the DLT-V72 (e.g. printers), be sure to power up the peripheral devices at the same time or after the DLT-V72; otherwise, you may encounter start-up problems, malfunctions or even irreparable damage to the device.

12.3.1. Plugging in and screwing on the power supply cable

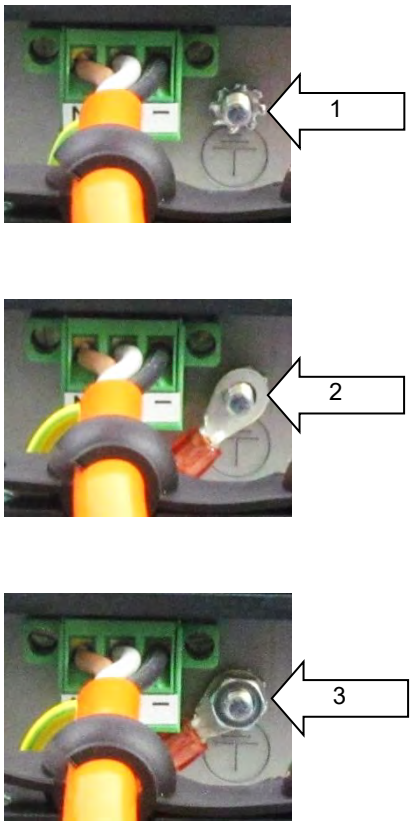
Fig. 12.2: The power supply cable secured, cable inserted in rubber seal



- ⇨ Plug the power supply cable into the power supply plug-in location.
- ⇨ Screw both mounting screws hand-tight.
- ⇨ Fold open the round cable passage in the rubber seal.
- ⇨ Insert the power supply cable.

12.3.2. Securing the ground using ring tongue to the ground bolt

Fig. 12.3: Ring tongue secured to the ground bolt



⇨ Secure the ring tongue of the power supply cable to the ground bolt.

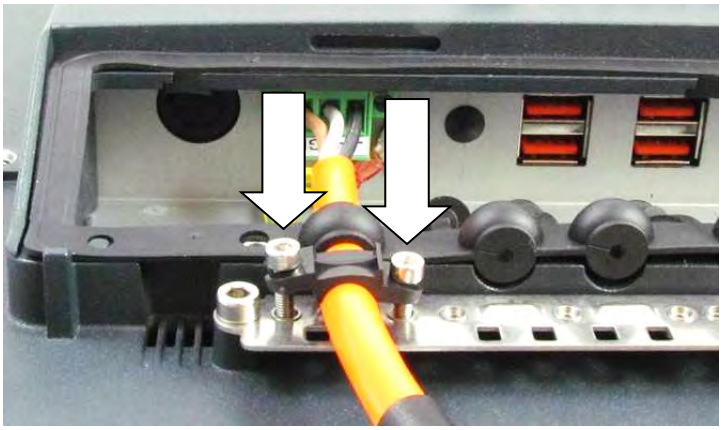
ATTENTION For correct grounding, it is important to have the correct order of the components on the ground bolt (from inside to outside):

1. Toothed washer (internal).
2. Ring tongue of the power supply cable (flat side faces the DLT-V72 connector panel).
3. Tightening the nut hand-tight.

12.3.3. Securing the power supply cable to the strain relief rail

- ⇨ Place one cable clip on the power supply cable.
- ⇨ Secure the cable clip to the strain relief rail using 2 mounting screws (ISO 4762-M4x10-A2 cylinder-head screws).
- ⇨ Tighten the mounting screws alternatingly!
- ⇨ **ATTENTION** Tighten the mounting screws sufficiently but on no account pinch or crush the cable. If you do, the cables may break or the cable insulation may get damaged.

Fig. 12.4: Cable clip secured to the strain relief rail.



12.4. Connecting the USB, Ethernet and COM cables

NOTICE: Physical damage

Observe the following when connecting/removing external devices on the DLT-V72.

- ⇨ Only use accessories that have been tested and approved for the respective DLT-V72.
- ⇨ The DLT-V72 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-V72 and the peripheral devices.
- ⇨ Make sure that peripherals with their own power supply are either switched on at the same time as the DLT-V72 or after the start of the DLT-V72.
- ⇨ Otherwise, you must ensure that a backflow from the external device to the DLT-V72 cannot take place.
- ⇨ Only power up the DLT-V72 when all devices have been connected and the DLT-V72 has been closed correctly (remember the cable cover!). Otherwise, you may damage the DLT-V72.

Please observe the mounting instructions supplied with the optional accessory.

12.4.1. USB cable

- ⇨ Plug the required USB cable into the associated port.
- ⇨ Fold open the respective round cable passage in the rubber seal.
- ⇨ Insert the USB cable.
- ⇨ Secure each USB cables to the strain relief rail with cable clips and screws.
- ⇨ **ATTENTION** Tighten the mounting screws sufficiently but on no account pinch or crush the cable. If you do, the cables may break or the cable insulation may get damaged.

Fig. 12.5: USB cable on the connector panel; secured to the strain relief rail

12.4.2. Ethernet cable

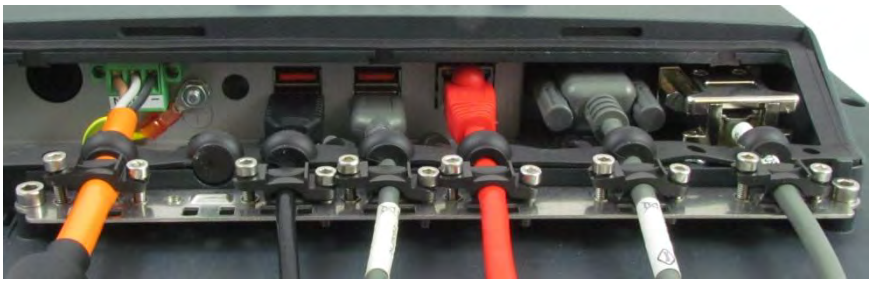
- ⇨ Plug the Ethernet cable into the associated port.
- ⇨ Fold open the round cable passage in the rubber seal.
- ⇨ Insert the Ethernet cable.
- ⇨ Secure Ethernet cable to the strain relief rail with cable clips and screws.
- ⇨ **ATTENTION** Tighten the mounting screws sufficiently but on no account pinch or crush the cable. If you do, the cables may break or the cable insulation may get damaged.

Fig. 12.6: Ethernet cable on the connector panel; secured to the strain relief rail

12.4.3. COM cable

- ⇨ Plug the required COM cable into the associated port.
- ⇨ Fold open the respective round cable passage in the rubber seal.
- ⇨ Insert the COM cable.
- ⇨ Secure the COM cable to the strain relief rail with cable clips and screws.
- ⇨ **ATTENTION** Tighten the mounting screws sufficiently but on no account pinch or crush the cable. If you do, the cables may break or the cable insulation may get damaged.

Fig. 12.7: COM cable on the connector panel; secured to the strain relief rail



12.5. Closing 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. 12.8: Unused cable outlets sealed off with blind plugs

12.6. Attaching the cable cover

NOTICE: Physical damage

Not sealed device due to incorrect attachment of the cables and the cable cover.

The protection class/category of the DLT-V72 is only ensured if the cable cover is properly installed.

Improper installation can result in liquid penetrating into the DLT-V72 during operation. There is then a risk of short-circuiting, corrosion and wear.

⇨ Place the cable cover in the DLT-V72 housing slot.

⇨ Screw the cylinder-head screws loosely into the holes of the cable cover.

⇨ Then fully tighten the screws with 3 Nm torque.

Fig. 12.9: Cable cover closed and screwed together

12.6.1. Pressure compensation element

The DLT-V72 cable cover has a pressure compensation element.

⇨ 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.

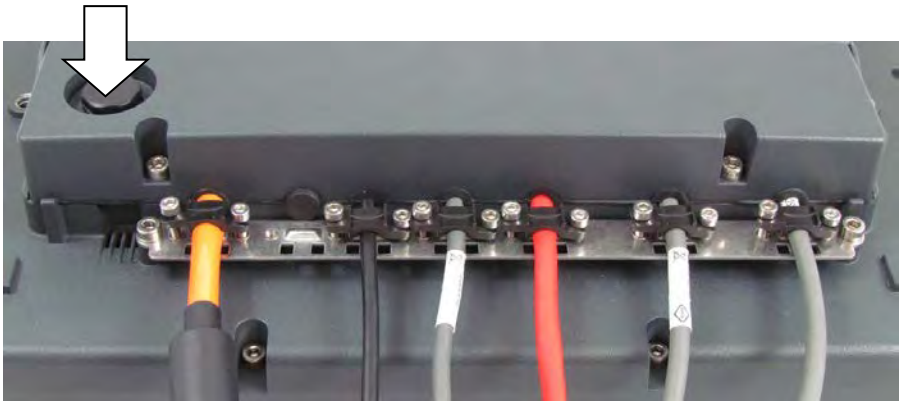


Fig. 12.10: Pressure compensation element - Do not modify or remove

13. Connectors

13.1. Under the cable cover

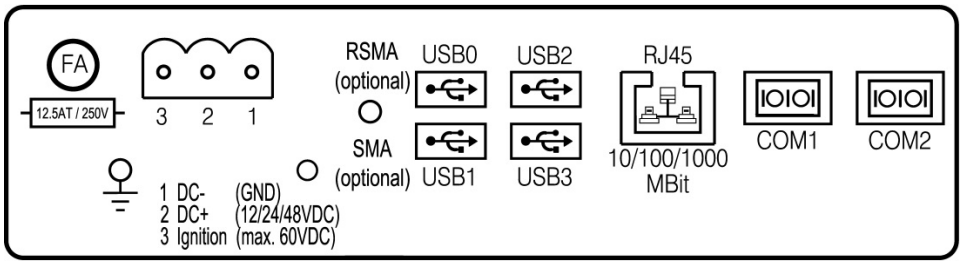


Fig. 13.1: External connectors under the cable cover

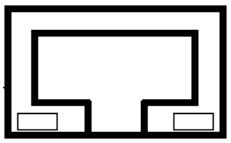
Pin assignment	
Power supply	12/24/48 VDC nominal
1 x RSMA (optional)	Remote Wi-Fi antenna
1 x SMA (optional)	Remote WWAN antenna
USB0, USB1, USB2, USB3	USB 2.0 interfaces (HI-SPEED™), bootable
RJ45	LAN Ethernet 10/100/1000 MBit/s
COM1, COM2	Serial interfaces

13.1.1. Network adapter (10/100/1000)

The DLT-V72 is equipped with a 10/100/1000 Mbit network adapter with 10/100/1000 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:

Fig. 13.2: RJ45 network port

Left LED (green):
LED off: no connection
LED on: connection (link)



Right LED (orange):
LED off: no activity
LED flashing: activity

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.

13.1.2. USB, Service-USB

USB connection, for example for mouse, keyboard, USB stick:

- 4 x USB 2.0 Host
- USB 2.0 Hi-Speed
- Fused at 1.0 A per channel
- ESD Level 4 protected (according to EN 61000-4-2)

13.1.3. COM1 and COM2

The DLT-V72 is equipped with two externally accessible serial interfaces COM1 and COM2. Resources for the serial interfaces are pre-defined in the system architecture and automatically managed by the BIOS.

Technical Data	
COM1	Max. 115,200 Baud (16550A compatible, 16 byte FIFO), supports EIA-232-E on external 9-pin D-Sub connection ESD Level 4 protected (according to EN 61000-4-2)
COM2	Max. 115,200 Baud (16550A compatible, 16 byte FIFO), supports EIA-232-E on external 9-pin D-Sub connection ESD level 4 protected (according to EN 61000-4-2)

13.1.4. COM1 as a voltage source

The COM1 interface can optionally supply to externally connected equipment with +5 VDC.
The voltages are protected by internal fuses and may not exceed a continuous consumed current of 1 A at 5 V.
Depending on the connected devices, the maximum current consumption may be significantly lower.

Using the DLoG Config tool, you can select whether +5 VDC or RI is output on pin 9 of COM1.

13.2. Under the antenna

NOTICE: Physical damage

Improper opening of the antenna can impair the function of the entire DLT-V72 system and in particular the Wi-Fi functionality.

The antenna may only remain open for the duration of the service work.

No objects or liquids may enter the opened DLT-V72 during this.

Only when the antenna is properly closed again may operation be resumed; the protection class/category is only ensured again after doing so.

13.2.1. Service USB

There is a service USB interface under the antenna. It can be used for service purposes, e.g. to install software updates.

- USB 3.0 SuperSpeed
- Fused at 1.0 A per channel
- ESD Level 4 protected (according to EN 61000-4-2)

A plug connector which meets the specific shock and vibration requirements is used for the service USB interface.

⇨ Exercise special care when removing and plugging in USB connectors.

Fig. 13.3: Antenna opened

13.2.2. CFast slot

There is a CFast slot under the antenna.

- ⇨ Exercise special care when removing and re-inserting CFast cards.
- ⇨ Use only CFast cards that have been approved.

13.2.3. Antenna opening/closing

Opening

- ⇨ Loosen the two screws of the antenna using Torx screwdriver.
- ⇨ Carefully lift up the antenna.

Fig. 13.4: Antenna opened

Closing

- ⇨ Place the antenna back onto the DLT-V72.
- ⇨ The antenna seal must not be damaged; it must be seated correctly in the groove.
- ⇨ Tighten the two screws of the antenna again (1 Nm torque).

14. Integrated power supply, power supply cable

DLT-V72 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.

Fig. 14.1: DC Power supply cable with Phoenix Combicon, 3-pin

WARNING

Electrical shock due to lack of disconnecting device.

The DLT-V72 does not have any externally accessible switching facility, with which the industrial PC can be quickly disconnected from the power supply in an emergency.
To be able to quickly disconnected the industrial PC from the power supply in emergency situations:

- ⇨ Install an easily accessible disconnecting device close to the industrial PC, e.g. a suitable load switch for low voltage.
- ⇨ Make sure that the disconnecting device disconnects all power supply lines.

Power supply	
DC power pack 12/24/48 VDC (wide-range power supply unit) 60 W / 80 W internal Type DC-16	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 6 V: 40 W For 9 V: 60 W Rising in linear fashion between the above
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)
Nominal current	8.4 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-V7210 (all model types)	Typically 25 W; Standby typically 1 W
DLT-V7212	Typically 30 W; Standby typically 1 W

Power supply unit fuses		
Power supply unit	*Fuse type*	*Example*
DC-16	5 x 20 mm T 12,5 A H / 250 V	Schurter 0001.2515 Siba 179200.12,5 or similar produced by other manufacturers

The symbol for the fuse is **FA**. You will find the exact position on the sticker located on the connection plate of the DLT-V72.

14.1.1. DC voltage supply connection

Version: Phoenix Combicon, 3-pin.

External view:

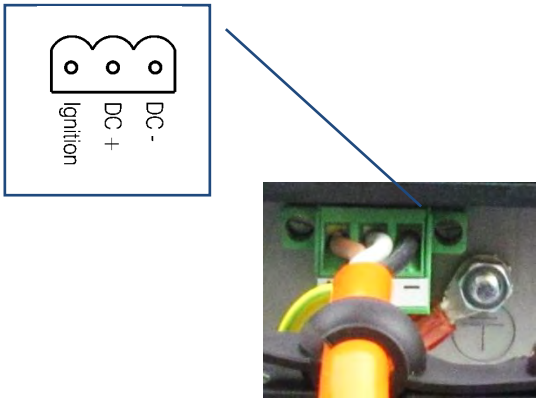


Fig. 14.2: DC power supply connector with connector detail view

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-V72. The signal reference is DC-.

14.1.2. DC Power supply cable

WARNING

Electric shock, fire due to incorrect power supply cable.

⇨ Use only original Advantech power supply cables; these meet the specific requirements for low-temperature flexibility, UV resistance, oil resistance, etc.

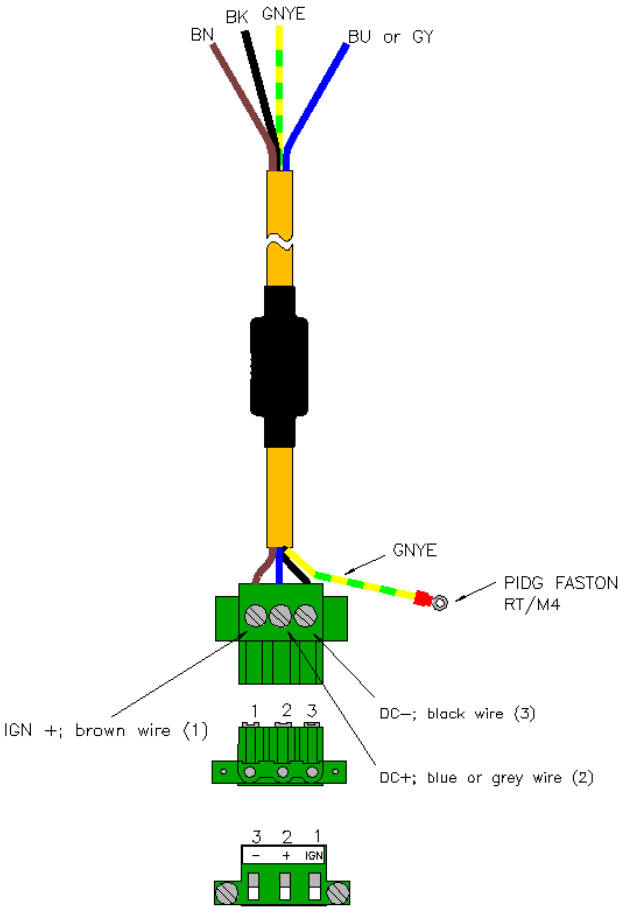


Fig. 14.3: DC connection cable assignment

15. Optional equipment

15.1. Integrated UPS (optional)

The DLT-V72 is optionally available with an integrated uninterrupted power supply (UPS).
The battery pack (lithium-ion technology) of the UPS is located in the battery pocket up top on the device.

Fig. 15.1: Battery pocket DLT-V72

WARNING

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

DLT-V72 devices with integrated UPS contain lithium-ion battery packs. These can ignite if handled or stored improperly (risk of fire), cause chemical burns or release toxic substances.

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

15.1.1. Battery pack specifications

Two battery pack types are available:

Lithium-ion battery pack I	
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	-20 to +40 °C
Charging time	4 h (fully recharge a completely discharged battery pack)
Charging temperature	-10 to +30 °C (ambient temperature)
Storage temperature	-20 to +60 °C
Maximum output power	40 W
Battery voltage	7,2 V
Battery capacity	2500 mAh

Lithium-ion battery pack II	
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	-30 to +50 °C
Charging time	4 h (fully recharge a completely discharged battery pack).
Charging temperature	-10 to +50 °C (ambient temperature)
Storage temperature	-30 to +60 °C
Maximum output power	40 W
Battery voltage	7,2 V
Battery capacity	2000 mAh

15.1.2. Charging the battery pack

⇨ Connect the properly installed DLT-V72 to the main supply voltage.

ATTENTION:
The cable cover of the DLT-V72 must be screwed together properly.
The battery pocket must be screwed together properly.
The device must be fully closed.

WARNING

Electric shock when charging the battery pack.

⇨ Do not connect damaged battery packs to the DLT-V72; do not charge.

⇨ Battery packs become warm while charging; this is normal. However, if they become excessively hot, immediately disconnect the DLT-V72 from the power source.

⇨ Do not continue to use the DLT-V72 if you notice an unusual level of heat or an unusual smell during charging.

⇨ Provide for sufficient ventilation of the DLT-V72 during charging.

15.1.3. Replacing the battery pack

The battery pack of the DLT-V72 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.

⇨ Use only original battery packs from Advantech.

⇨ The battery packs must be authorized/approved for the DLT-V72.

⇨ Do not use battery packs from any other Advantech devices; they are not compatible.

⇨ If battery packs from other manufacturers are inserted in the DLT-V72, the warranty provided by Advantech for this device will be rendered void.

Procedure for opening the battery cover

- ⇨ **IMPORTANT**: Switch off the DLT-V72.
- ⇨ Loosen the two screws of the battery cover using an Allen wrench.
- ⇨ Remove the battery cover.
- ⇨ Remove the battery pack.
- ⇨ Insert the new battery pack into the battery pocket as shown in the figure.
- ⇨ Make sure that the removal tab of the battery pack is inside the sealing surface.
- ⇨ Then reattach the battery cover (tightening torque 2 Nm).

Fig. 15.2: Inserting the battery pack in the battery pocket

15.2. Screen defroster (optional)

The following DLT-V72 devices are optionally available with a screen defroster.

- DLT-V7210 D with resistive touchscreen
- DLT-V7212 D with resistive touchscreen

Functional description

As soon as the internal temperature of the DLT-V72 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 0°C to -10°C.
  This depends on how quickly the ambient temperature changes or how quickly the DLT-V72 cools.
- Analogously, the screen defroster is typically deactivated again when the ambient temperature rises to +10°C to +20°C.

The screen defroster has a heat output of approx. 30 watts.
The screen defroster does not work when the DLT-V72 is running on battery power.
The screen defroster will switch off automatically if the internal device temperature is too high and cannot be switched on manually using the keys.

Manual operation

The screen defroster can be manually activated and deactivated using the following key combination:

+ <SHIFT>

Important: The temp LED indicates whether the screen defroster is active or inactive, not the touch LED above this key.

For more information about operating, see chapter ***Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.***.

15.3. Keyboards and keyboard mounts (optional)

Any USB keyboard can be connected to the DLT-V72.

Advantech offers the following keyboards:

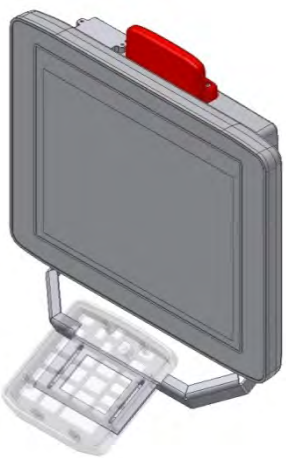
Fig. 15.3: SMALL keyboard

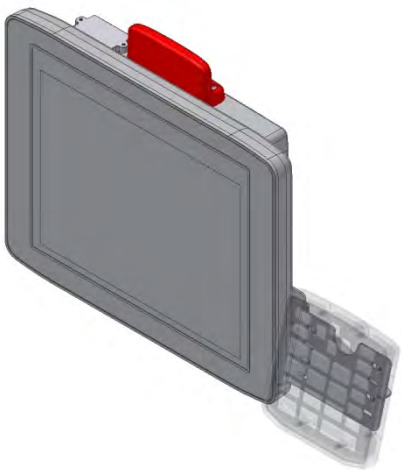
- SMALL keyboard
- Mountable
- Protection class IP65
- Keyboard layouts: German, English, French

Fig. 15.4: 24-key keypad

- 24-key keypad
- Mountable
- Protection class IP65

Fig. 15.5: Keyboard mounting examples





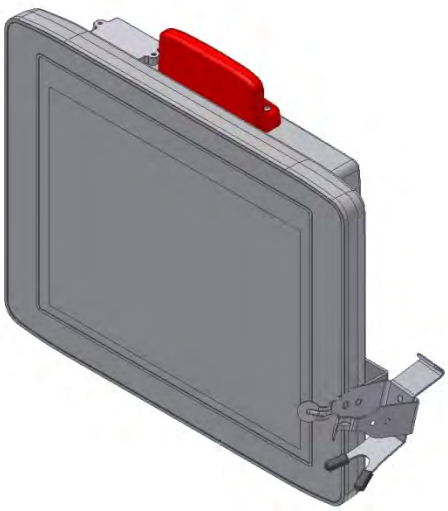
15.4. Scanner and scanner bracket (optional)

You can connect scanners to either the USB interface or the serial interface.
Please contact your Advantech sales representative if needed.
If connected to COM1, the scanner can be powered through the interface with a voltage of 5 V.

⇨ Use only scanners that have been approved by Advantech.

Optional scanner brackets are available for the DLT-V72.

Fig. 15.6: Example scanner bracket



15.5. Touch stylus

Advantech offers some touch stylus pens (with associated mountings) for resistive and PCT touchscreens.
Please contact your Advantech sales representative if needed.

⇨ Use only touch stylus that have been approved by Advantech.

Fig. 15.7: Examples touch stylus

Touch stylus with mounting
for resistive touchscreen:

Touch stylus with mounting
for PCT touchscreen:

15.6. USB recovery stick (optional)

The optional Advantech recovery stick allows images to be backed up and restored onto the DLT-V72 when necessary (backup & recovery).
Please contact your Advantech sales representative if needed.

15.7. Protective film for touchscreen (optional)

An optional protective film is available for resistive touchscreens. This film protects the touchscreen during extreme use.

NOTICE: Physical 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-V72 touchscreen at the factory.
If the film must be attached by the customer or replaced:

- ⇨ Turn off the DLT-V72.
- ⇨ Use a neutral glass cleaner without ammonia or isopropyl alcohol applied to a lint-free cloth.
- ⇨ Wipe off the touchscreen with it.
- ⇨ Then use distilled water to remove any residual glass cleaner.

NOTICE: Physical 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.

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

15.8. Screen blanking (optional)

An optional screen blanking function is available for the DLT-V72 for use in vehicles.
The screen blanking functions darkens the DLT-V72 screen automatically as soon as the vehicle starts driving.

Please observe the mounting instructions supplied with the screen blanking option.

16. Maintenance

16.1. Manufacturer, authorized service centers

WARNING

Only the manufacturer and its authorized service centers may perform:

- Repairs
- Modifications
- Replace modules
- Open the device

The legal warranty shall apply. It expires if the customer performs measures on the device that are only permitted to be performed by the manufacturer and it's authorized Service Centers.

The following measures may be performed by the **operator (by skilled personnel)**:

- Opening/closing the antenna to use the service USB interface and CFast slot.
- Opening/closing the battery pocket to replace the battery pack
- Replace the integrated keyboard of the DLT-V7210 K, KD

16.2. Replacing the integrated keyboard of the DLT-V7210 K, KD

If necessary, the integrated keyboard of the DLT-V7210 K, KD can be removed and replaced by a new keyboard (only by skilled personnel).

WARNING

Hazardous voltage, electric shock from contact with live parts.

To prevent an electric shock:

⇨ Switch off the device before replacing the integrated keyboard.

⇨ Disconnect the device from the power supply.

⇨ Disconnect connected accessories.

ATTENTION: Physical damage

Preventing damage to the device.

⇨ Observe the applicable ESD and accident prevention regulations.

⇨ The work may only be performed in an ESD-protected, clean environment.

⇨ ESD protective mats must be installed on the floor and on the worktable.

⇨ The installer must also wear ESD shoes and clothing

16.2.1. Remove the integrated keyboard

Fig. 16.1: Unscrew the mounting screws of the integrated keyboard

- ⇨ Use a TX10 screwdriver to loosen the 5 mounting screws of the integrated keyboard.
- ⇨ Carefully remove the keyboard grid; it will be used again later.
- ⇨ Carefully remove the silicon keyboard mat; make sure you do not damage the circuit board or components on the circuit board.

16.2.2. Attach the integrated keyboard

Fig. 16.2: DLT-V7210 K plus integrated keyboard components

Reuse:

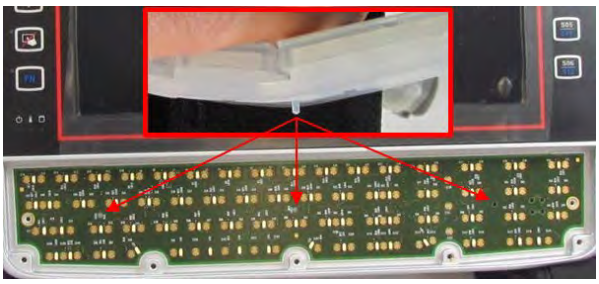
- Keyboard grid, black

New, replacement parts:

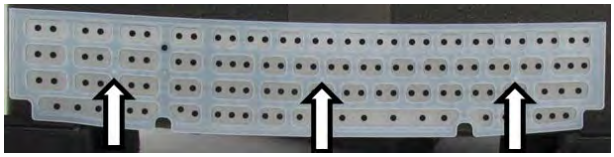
- Silicon keyboard mat
- 5 x screws
  ISO14580-m3x8 A2

Procedure

Fig. 16.3: Position at which the 3 nubs are inserted



- Place the silicon keyboard mat on the circuit board



– Carefully press the 3 nubs on the back of the silicone keypad into the openings provided on the circuit board.

⇨ Place on the keyboard grid at a 45° angle, see *Fig. 16.4*.

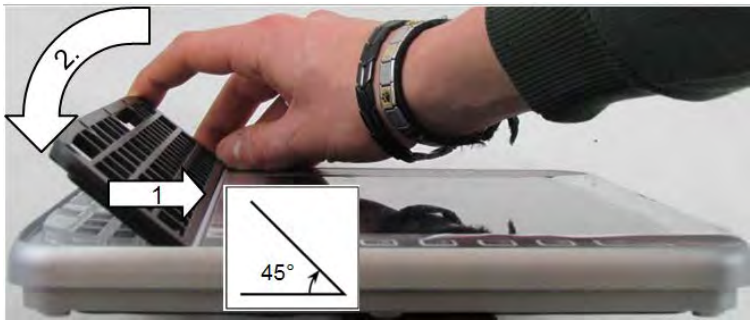
⇨ Snap in keyboard grid lugs

⇨ Fold keyboard grid onto keyboard

⇨ Align keys

⇨ Press keyboard grid firmly

Fig. 16.4: Attach keyboard grid



⇨ Use a TX10 screwdriver to tighten the 5 mounting screws of the integrated keyboard.

⇨ Tightening torque: Maximum 2 Nm.

16.3. Regular checks and maintenance of the complete system

To ensure the stability and security of the DLT-V72 complete system:

- ⇨ Regularly check whether the DLT-V72 is firmly seated in the associated holder (RAM mount, mounting bracket) and the mounting screws are not loose.
- ⇨ Also check whether the bracket is secured stably to the respective deployment location. This is particularly important if the DLT-V72 is installed on a vehicle.
- ⇨ Check whether all connected cables are secured and the cable cover shuts tightly.

WARNING

Risk of accident due to unstable attachment of the DLT-V72 to vehicles.

If the attachment of the DLT-V72 becomes loose and breaks during driving, this can lead to severe accidents.

- ⇨ Perform the attachment checks described above at regular intervals.

16.4. Replacing the battery pack

See section *15.1 Integrated UPS (optional)*

16.5. Cleaning the DLT-V72

WARNING

Hazardous voltage, electric shock from contact with live parts when cleaning the device.

To prevent an electric shock while cleaning the device:

- ⇨ Switch off the DLT-V72 before cleaning.
- ⇨ Disconnect from the power supply.
- ⇨ Disconnect connected accessories.

NOTICE: Physical damage

Cleaning the touchscreen and housing:

- ⇨ Never use chemical solvents to clean the touchscreen.
- ⇨ Do not use acidic or alkaline solutions.
- ⇨ Do not use cleaning agents that contain ammonia or sulfur (tile cleaners, for example, contain ammonia).
- ⇨ Do not use any abrasive glass cleaner or cloths that could scratch the touchscreen.

Cleaning the housing

- ⇨ Ensure that the DLT-V72 is switched off and currentless.
- ⇨ Clean the housing with a slightly dampened cloth.
- ⇨ Do not use compressed air, a high-pressure cleaner or vacuum cleaner, as this can damage the surface.
  Using a high-pressure cleaner poses the additional risk of water entering the device and damaging the electronics or display.

Cleaning the touchscreen

- ⇨ Device with PCT touchscreen: Switch off the device completely.
- ⇨ Device with resistive touchscreen: Deactivate the touchscreen:
- ⇨ Use a neutral glass cleaner without ammonia or isopropyl alcohol applied to a lint-free cloth.
  ATTENTION: Do not apply cleaning agent to the touchscreen; apply it to the cleaning cloth
- ⇨ Then wipe off the touchscreen with it.

16.6. Touchscreen protective film (optional)

NOTICE: Property damage

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

The ordered optional protective film is normally attached to the DLT-V72 touchscreen at the factory.

If the film must be attached by the customer or replaced:

- ⇨ Turn off the DLT-V72.
- ⇨ Use a neutral glass cleaner without ammonia or isopropyl alcohol applied to a lint-free cloth.
- ⇨ Wipe off the touchscreen with it.
- ⇨ Then use distilled water to remove any residual glass cleaner.

  NOTICE: 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.

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

17. Malfunctions and troubleshooting

Please contact Advantech if the DLT-V72 malfunctions.

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 active.	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	Reinstall the touch driver or change settings
	Touchscreen is not calibrated correctly.	The touchscreens of the DLT-V72 is already calibrated at the factory and therefore and does usually not need to be recalibrated. However, the operating systems MS Windows 7 Pro, Windows 8.1 Industry and WE8S do permit recalibration of the touchscreen via software (Menu **Control Panel -> Tablet PC Settings**). This resets the sensitivity of the touchscreen to an operating system default setting, which can result in poorer detection of taps on the screen. You can use **Reset** to reset the software recalibration.
Operating system	External boot media lock	Remove all external storage

does not start	Operating system damage	Operating system or image must be reinstalled
Software keyboard not functioning	License missing or invalid	Enter the correct software license
No Wi-Fi connection	Connection deactivated	Activate connection in the **Control Panel**
	AP access problem	List ACL and check access rights to AP
	Invalid network settings	Check Wi-Fi, 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 looses settings after a restart	Write protection activated	Deactivate write protection or authorize changes in operating system
	Operating system damage	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

18. Reasonably foreseeable misuse

Observe the intended use

The DLT-V72 Industrial Computers are data communication terminals for use in commercial environments (e.g. logistics, warehousing, manufacturing).

- ⇨ Do not use in the EX zone (potentially explosive), on ships and rail vehicles.
- ⇨ Do not use in life-supporting systems or safety-critical facilities.

Permissible environmental conditions

- ⇨ Observe the permissible environmental conditions.

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.)

Authorized representative in Europe:

Advantech Europe B.V.

Science Park Eindhoven 5708, 5692 ER Son, Netherlands

Hereby declares that the following products

Product name: Industrial Computer

Model name: DLT-V72xx

Comply with the provisions of the applicable EU directives, including their amendments applicable at the time of the declaration. For getting the detailed declarations of conformity please visit www.advantech.com or www.advantech.eu and contact your regional person in charge.

19.2. Low-voltage guidelines

DLT-V72 devices were tested and fulfill the IEC60950-1.

19.3. EMC guidelines

19.3.1. Shielded components

All components connected to the DLT-V72, 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-V72 devices fulfill the requirements of the EU Directive "2014/30/EU Electromagnetic Compatibility".

19.3.3. USA/CANADA

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter

This device complies with part 15 of the FCC rules and RSS-247 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.

NOTE: 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help
- This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID/ISED ID

Please find the FCCID/ISED ID on the device lables.

19.4. China

Numerous DLT-V72 models are approved for the Chinese market and carry the appropriate labeling on the device.

19.5. Taiwan

Numerous DLT-V72 models are approved for the Taiwanese market and carry the appropriate labeling on the device.

19.6. MIC Japan (previously TELEC)

In several of the DLT-V72 series, the PE15N PCI Express Mini Card from Laird is used. Laird has implemented the following MIC certifications for this:

- Article 2 Item 19, Category WW (2.4 GHz Channels 1 - 13)
- Article 2 Item 19-2, Category GZ (2.4 GHz Chanel 14)
- Article 2 Item 19-2, Category XW (5150-5250 W52 & 5250-5350 W53)
- Article 2 Item 19-2, Category YW (5470-5725 W56)

Source:
http://www.lairdtech.com/Products/Embedded-Wireless-Solutions/Summit-Wi-Fi-Radio-Modules/Device-Certification-Guide/#MIC

20. End-of-life device disposal

DLT-V72 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, if necessary.

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