



# User Manual Industrial PCs of board version N11

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# 1 About this manual

## 1.1 Target group

This manual is intended for qualified specialist personnel.

It serves to complete their knowledge about proper installation, commissioning, and maintenance of the device.

However, the manual does not replace expert knowledge.

## 1.2 Requirements

In order to be able to understand and properly implement the descriptions in this document, basic skills in installation, software installation and maintenance of technical devices are required.

## 1.3 Signal words

The following signal words are used in this document:

<b>Danger</b>	<i>Danger</i> indicates warnings which could lead to death or serious injury if ignored.
<b>Warning</b>	<i>Warning</i> indicates warnings which could lead to minor injury or severe material damage if ignored.
<b>Caution</b>	<i>Caution</i> indicates warnings which could lead to minor material damage if ignored.



## 1.4 Symbols

The following symbols are used in this document:

### 1.4.1 Indicative symbols

This manual contains instructions which must be observed to ensure your personal safety and to prevent damage to property.



Warning regarding dangers in association with one of the signal words **Caution**, **Warning**, or **Danger**.



Warning regarding dangers involving electricity in association with one of the signal words **Caution**, **Warning**, or **Danger**.



Warning regarding dangers involving electrostatic discharge in association with one of the signal words **Caution**, **Warning**, or **Danger**.



Warning regarding dangers involving burns on hot surfaces in association with one of the signal words **Caution**, **Warning**, or **Danger**.



Warning regarding dangers involving explosions in association with one of the signal words **Caution**, **Warning**, or **Danger**.



Warning regarding corrosives in association with one of the signal words **Caution**, **Warning**, or **Danger**.



**Note** on using the product.

Failure to observe these instructions may result in an adverse event or an undesirable condition.



Cross reference to other chapters.

### 1.4.2 List symbols

- List
  - Subitem in a list
- Instruction which consists of only 1 step.
- 1. Instruction which consists of several steps.  
The steps must be performed in the specified order.

## 1.5 Distinctions

The following distinctions are used in this document:

Distinction	Description
<i>Italics</i>	Emphasis
<b>Bold</b>	Product name or strong emphasis
<code>Courier</code>	Term from software interfaces (GUI) and device labels

## 1.6 Abbreviations and technical terms

The following abbreviations are used in this document:

Abbreviation	Description
<b>ALS</b>	Ambient Light Sensor
<b>CFL</b>	Compact Fluorescent Lamp
<b>CPU</b>	Central Processing Unit
<b>GPRS</b>	General Packet Radio Service
<b>HDD</b>	Hard Disk Drive
<b>IMEI</b>	International Mobile Equipment Identity (unique serial number for GSM and UMTS devices)
<b>MAC</b>	Media Access Control (network adapter hardware address)
<b>SIM</b>	Subscriber Identity Module
<b>UMTS</b>	Universal Mobile Telecommunications System
<b>Windows</b>	Microsoft Windows operating system
<b>WLAN</b>	Wireless Local Area Network
<b>PCAP</b>	Projected capacitive touchscreen

The following technical terms are used in this document:

Abbreviation	Description
<b>AHCI</b>	<b>A</b> dvanced <b>H</b> ost <b>C</b> ontroller Interface
<b>RAID</b>	<b>R</b> edundant <b>A</b> rray of Independent <b>D</b> isks
<b>GUI</b>	<b>G</b> raphical <b>U</b> ser Interface
<b>MCU</b>	<b>M</b> icro <b>c</b> ontroller <b>U</b> nit
<b>NCQ</b>	<b>N</b> ative <b>C</b> ommand <b>Q</b> ueuing
<b>PCI</b>	<b>P</b> eripheral <b>C</b> omponent Interface
<b>PCIe</b>	<b>P</b> eripheral <b>C</b> omponent Interface <b>e</b> xpress

## 2 Intended use

Your Industrial PC has been manufactured according to current technical standards and complies with approved safety regulations.

noax Industrial PCs are designed to be used for the collection of operating and machine data, visualization, logistics, or controlling machines and equipment.

noax Industrial PCs are used in the harshest of industrial environments, such as within the production, logistics, food processing and chemical industries. Depending on the housing variant (see Chapter 5), they can be installed such that they are stationary or mobile on vehicles.

Any other use is not in compliance with the intended use.

The user or operator of the noax device is solely liable for any resulting damage.

This also applies to unauthorized modifications to the device.

-  **Use the industrial PC only if it is in perfect condition and not damaged in any way.**

## 3 Scope of delivery

Check the contents of the packaging to make sure that everything listed on the delivery slip is there. When checking, empty everything out of the packaging.

If the goods that have been delivered to you do not correspond to your delivery slip, please contact the noax hotline.



**Please find contact information on the back cover of this user manual.**

The packaging has been designed specifically for the noax Industrial PC to prevent damage during transportation. Please keep this packaging safe.

-  **Always use this packaging when transporting the Industrial PC.**

## 4 General safety instructions

When using products which come into contact with electrical voltages, the valid VDE/IEC/EN regulations must be observed.



### **Warning**

Repairs on the Industrial PC should only be carried out by authorized specialist personnel.



### **Warning**

Never repair the device yourself. Always contact the noax hotline instead and send in your device to be repaired if necessary.

The device information required when you contact the hotline can be found on the Industrial PC rating plate. Important information about the features of your device is documented here. Please always give the technician the full type code and serial number (for rating plate see Chapter 5.1.1 or 5.1.2 / for device information from nS-MART™ see Chapter 11.4).

### 4.1 Documentation

- To avoid injury and damage, it is important to read and observe the following usage and safety information before initial operation.
- The manufacturer/supplier accepts no liability for any damage that occurs as a result of failing to comply with these instructions.
- Keep this documentation and make sure to include it when passing on the device.

### 4.2 Handling the device

- Respect the weight of the devices when handling them (e.g., transportation, installation).
- Only use the device if it is in perfect condition. Replace defective devices immediately, especially when:
  - The power cable or power socket is damaged.
  - Liquid has entered the device.
  - The device no longer works as described in the documentation.
  - The housing is damaged.
- Check that the values specified on the rating plate correspond to the electrical ratings for your power supply.
- IP protection class:  
Make sure that liquids and aggressive vapors (e.g., from cleaning agents) are not able to enter areas without an IP protection class, such as the connector area.
- Batteries:  
Only use batteries of the same type or those of equivalent types recommended by the manufacturer.



Follow the instructions provided in Chapter 16 on “Disposal”.

## 4.3 Devices with internal power supply



**Applies to device types S15-G2 and S19 as well as devices with the option “Internal power supply”**

- Use only the mains cable that was supplied with devices with internal power supply because only this cable used in conjunction with the safety catch can ensure secure locking of the plug connection.
- The device should only be operated using a circuit secured in line with standards with a protective earth conductor and a plug connection with a protective earth contact.
- Ensure that the mains cable is not damaged.

## 4.4 External power supply

- The external power supply should not be opened for any reason. It does not contain any serviceable components.
- When attaching the external power supply, only use the supplied mounting frame, or use the available mounting holes (do not attach to the cable).
- The device should only be operated using a circuit secured in line with standards with a protective earth conductor and a plug connection with a protective earth contact.
- Use the supplied power cord for the power supply as it complies with all of the important safety regulations.
- The Industrial PC should only be operated using the power supplies and connector cables provided.
- The external power supply should not be covered or installed in a housing so as to avoid the risk of overheating.
- The external power supply should only be operated outside of the Industrial PC housing. Operation inside a connector cover is not permitted either.

## 4.5 External devices

- External devices (e.g., scanner connected to a COM port, ext. monitor) should only be connected to / disconnected from the Industrial PC when it is switched off. Otherwise, this could damage the Industrial PC electronics or the external device itself.  
Wait at least five seconds after switching off the Industrial PC before connecting an external device.  
Exception: Hot plug devices connected to USB ports.
- When connecting cables to the Industrial PC, make sure that there is no tensile loading on the cables in question.

## 4.6 Cleaning information



See Chapter 13 on cleaning the Industrial PC.

## 4.7 Safety information for selected countries

### 4.7.1 Denmark



**Warning**

Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.

### 4.7.2 Finland



**Warning**

Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.

### 4.7.3 Norway



**Warning**

Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr - og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel-TV nettet.



**Warning**

Apparatet må tilkoples jordet stikkontakt.

### 4.7.4 Sweden



**Warning**

Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.



**Warning**

Apparaten skall anslutas till jordat uttag.

## 5 Device types

### Industrial PC Compact – C12

Compact enclosure  
12 inch display  
Resistive touchscreen



### Industrial PC Compact – C12P

Compact enclosure  
12 inch display  
PCAP touchscreen



### Industrial PC Compact – C15

Compact enclosure  
15 inch display  
Resistive touchscreen



### Industrial PC Compact – C15P

Compact enclosure  
15 inch display  
PCAP touchscreen



**Industrial PC Compact – C19**

Compact enclosure  
19 inch display  
Resistive touchscreen



**Industrial PC Compact – C21W**

Compact enclosure  
21.5 inch widescreen display  
Resistive touchscreen



**Industrial PC Steel – S12**

Stainless steel enclosure  
12 inch display  
Resistive touchscreen



**Industrial PC Steel – S15**

Stainless steel enclosure  
15 inch display  
Resistive touchscreen





**Industrial PC Steel – S15-G2**

Stainless steel enclosure  
15 inch display  
Resistive touchscreen



**Industrial PC Steel – S19**

Stainless steel enclosure  
19 inch display  
Resistive touchscreen



**Industrial PC Panel – P15**

Front installation stainless steel enclosure  
15 inch display  
Resistive touchscreen



**Industrie PC Steel – S15P**

Stainless steel enclosure  
15 inch display  
PCAP touchscreen



**Industrie PC Steel – S15R**

Stainless steel enclosure  
15 inch display  
PCAP touchscreen



**Industrie PC Steel – S19P**

Stainless steel enclosure  
19 inch display  
PCAP touchscreen



**Industrie PC Steel – S19R**

Stainless steel enclosure  
19 inch display  
PCAP touchscreen



**Industrial PC Steel – S21WP**

Stainless steel enclosure  
21.5 inch widescreen display  
PCAP touchscreen



**Industrial PC Steel – S21WR**

Stainless steel enclosure  
21.5 inch widescreen display  
Resistive touchscreen



## 5.1 Information on the noax rating plate

The noax rating plate contains information on the housing type, the type of display installed, the touchscreen type, the mainboard variant and the serial number of the device.

The type of display installed is revealed by the code added on after the housing type, e.g. C12**S**, C12**X**, and C21**W** (see Chapter 15.2 for an explanation).

With some devices, a second code is added on after the housing type to indicate the touchscreen type, e.g., S21**WP** or S21**WR**.

(**P** = projected capacitive touchscreen; **PCAP** / **R** = resistive touchscreen).

The variant of the N11 mainboard can be identified by the code added after the mainboard is named, e.g., N11**G**, N11**F**, and N11**C** (see Chapter 15.3 for an explanation).

In addition to the serial number SN, the rating plate contains further important information about the Industrial PC:

- Options the IPC has additionally been equipped with
- MAC1, the hardware address for the LAN1 interface
- MAC2, the hardware address for the LAN2 interface
- WLAN, the hardware address and further information about the WLAN card



The differences between the housing types, displays, mainboard variants and touchscreen types are described within the technical data in Chapter 15.



For further information please visit our website at [www.noax.com](http://www.noax.com)

### 5.1.1 Rating plate for IPC type S12, S15, S15-G2, S19, P15



Fig. 1: Components of the rating plate for a IPC type S15-G2

## 5.1.2 Rating plate for IPC type C12, C12P, C15, C15P, C19, C21W

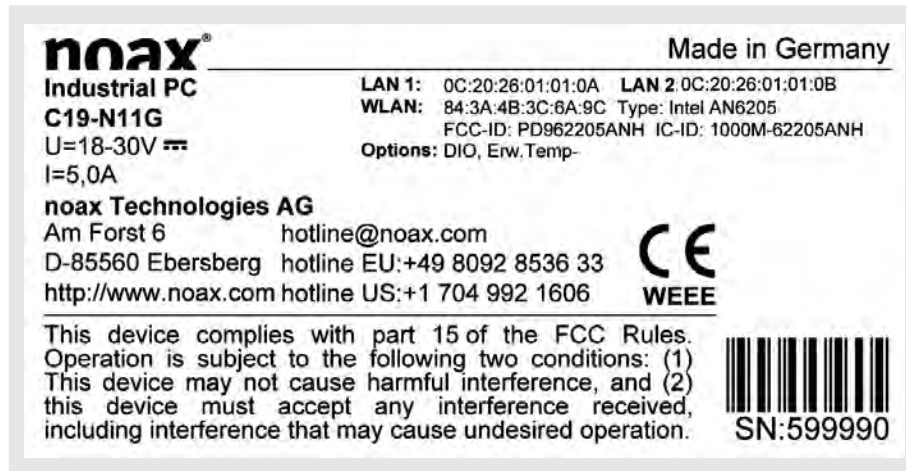


Fig. 2: Rating plate for a IPC type C19

### 5.1.3 Rating plate for IPC type S15P, S15R, S19P, S19R, S21WP, S21WR



Fig. 3: Components of the rating plate for a IPC type S21WP Hygienic (IP69k)

The “**Hygienic**” housing variant has been designed with the specific requirements for hygienic working environments in mind. The shape of the housing seals has been adapted to ensure ease of cleaning and a lack of dead space. Special screws that have special seals and boast an optimal design in hygiene terms are used for the connector cover and housing rear cover and are easy to undo using standard tools. The material used for the housing and screw seals is food safe and complies with FDA requirements.

The “**Production**” housing variant has been designed with the specific requirements for production in mind. The housing seals and the screws for the connector cover and housing rear cover have been adapted to suit these requirements.

The housing variants are certified to a high IP protection class of up to IP65 (NEMA 4) for the “Production” variant and up to IP69k for the “Hygienic” variant (in each case when a suitable connector protection is used). The IP69k protection class also allows for direct cleaning using a high-pressure cleaner (see also Chapter 13.1 on cleaning the Industrial PC).

## 6 Power supplies

### 6.1 External power supply

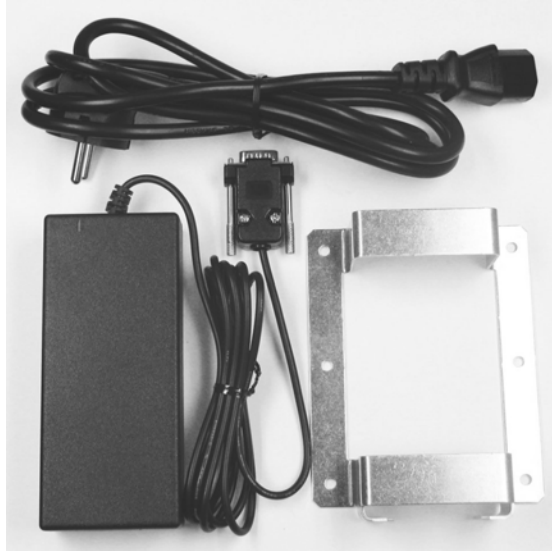


Fig. 4: External power supply

The scope of delivery of the external power supply consists of the following components:

- country-specific power cord
- power supply with device connector cable
- mounting bracket for installation

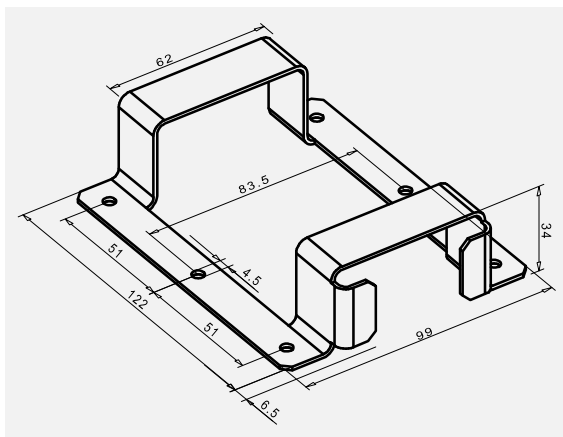


Fig. 5: Dimensional drawing for the Mounting bracket  
(all dimensions in mm)

The mounting bracket is used to hold the power supply.

Using the mounting holes in the mounting bracket, the power supply can be mounted directly onto a wall, for example.



#### **Danger**

**Do not open the power supply housing!** It does not contain any serviceable parts.



#### **Warning**

Only operate the power supply within the scope of its technical specifications.  
(See Chapter 15.4.1.)



#### **Warning**

Only operate the power supply in dry environments!



#### **Warning**

The power supply must not be positioned or operated in the housing or in the connector area of the Industrial PC. This would create a risk of overheating.



## 6.2 External power supply IP65 (NEMA 4)



Fig. 6: External power supply IP65 (NEMA 4)

The external power supply with protection class IP65 (NEMA 4) can be mounted directly onto a retainer plate, for example, using the mounting holes.

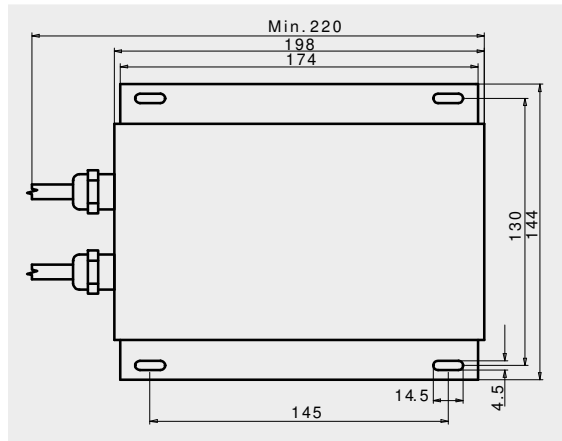


Fig. 7: Dimensional drawing (all dimensions in mm)

To install the external power supply, copy the drilling spacing shown in the drawing onto the surface onto which you intend to mount the equipment.



### **Danger**

**Do not open the external power supply housing!**

It does not contain any serviceable parts.



### **Warning**

Only operate the power supply within the scope of its technical specifications!  
(See Chapter 15.4.2.)



## 7 Safety instructions for initial operation



### **Danger**

In areas with hazardous explosive atmospheres only ATEX approved Industrial PCs have to be operated!

Pay attention for which hazardous explosive atmosphere the device is approved!



### **Danger**

**The Industrial PC must be completely disconnected from the power supply before the device is opened.**

To do this, shut down the operating system and unplug the supply voltage connector for the Industrial PC or the "Power 24 V" connector for the IPC. It is not enough to just shut down the operating system.



### **Danger**

**The device should only be operated using a plug connection with a protective earth contact. The plug connection must be supplied by a circuit secured in line with standards with a protective earth conductor and residual current device, which complies with the installation requirements applicable in the country in question.**



### **Danger**

**Repair work on electrical devices may only be carried out by authorized specialist personnel.**

Improper work on electrical devices and electronic components could cause life-threatening electric shocks.



### **Danger**

**Faulty and damaged electrical equipment and parts should only be replaced by authorized electricians.**



### **Danger**

**To prevent sensitive electronic devices from being affected, the Industrial PC may not be operated on airplanes, or in hospitals or other medical environments without prior permission.**



### **Warning**

**Install the battery with the "+" sign up (the "+" sign must be visible after installation).  
Battery: Manufacturer Panasonic, type BR2032, -22°F (-30°C) / 176°F (+80°C)**



### **Warning**

These devices contain electronic components with highly integrated modules or modular elements. Due to the technology employed, these electronic components are extremely sensitive to surges as well as to discharges of static electricity. To prevent this kind of damage, you should discharge the static electricity from your body before touching any of the electronic components in the system. When working on electronic components, please use an approved ESD (electrostatic discharge) guard band.



**Warning**

Make sure that there is no potential equalization through the device (e.g., by ground loops).



**Warning**

After working near the optional internal power supply of a device, a routine safety test according DIN VDE 0701-0702 have to be done.

This test also have to be repeated at regular intervals in compliance with the above mentioned standard.



**Warning**

The external power supply must not be positioned or operated in the housing or in the connector area of the Industrial PC. This would create a risk of overheating (this does not apply to internal power supplies installed ex works and granted approval).



**Warning**

After opening the device, please note that some parts and components can become very hot during operation (e.g., memory). Allow these components to cool down before touching them.



**Warning**

Before and while closing the device, for example after upgrades or servicing, check that all seals are positioned correctly.



**Warning**

To avoid injury, respect the weight of the devices when handling them, e.g., during installation and adjustment of the setting angle. This applies in particular to device types S15-G2 (31 lb / 14 kg) and S19 (47 lb / 21 kg).



**Caution**

For devices with internal power supply and for external power supplies for devices it must be easy to be disconnected from the mains supply at any time. The mains plug on the country-specific device mains cord is used as the disconnect device.

The socket to which the device is connected must be installed near the equipment and must be easily accessible at all times.



**Caution**

Should you experience interference to radio or television reception during operation of the Industrial PC (which can be determined by switching the Industrial PCon and off), the following actions can resolve the problem:

- Readjust the receiver antenna, or move the receiver.
- Increase the distance between the Industrial PC and the receiver.
- Use a different electric circuit for the power supply of the Industrial PC.
- Contact your specialist dealer or a radio and television technician.

## 7.1 Touchscreen



### Warning

To avoid damage and malfunctions, do not touch or clean the touchscreen surface with pointed, sharp, hard, or rough objects.

- ① For extreme conditions protective screen films for the touchscreen are available as an optional accessory.



### Warning

Do not hit or apply strong force to the touchscreen or the display, as this could cause damage or destruction (e.g., resulting in glass breakage).



### Caution

Avoid placing the Industrial PC with the touchscreen facing down. If this is absolutely necessary, put a soft cloth or piece of foam underneath it and make sure that the touchscreen cannot be damaged by any objects (e.g., screws).



### Caution

Do not wipe the touchscreen with items of clothing or sponges because this could scratch the surface (e.g., buttons on jacket sleeves or grit in sponges).



You can find further information about cleaning the touchscreen in Chapter 13.2.



### Warning for device type C12P, C15P, S15P, S19P and S21WP


The front of these device types – the projected capacitive touchscreen – consists of hardened glass. If not used properly, the glass surface may be chipped or broken.

## 7.2 Measures for compliance with EMC guidelines

Always use shielded connecting cables when connecting devices to the serial interfaces (e.g., COM1 or COM2) of the noax Industrial PC to ensure trouble-free operation of the connected devices and the Industrial PC.

noax Industrial PCs may be equipped only with antennas (WLAN, etc.) which are sold by noax.


## 8 Installation

-  You can find more information about connector protections and various device brackets on our website [www.noax.com](http://www.noax.com).

### 8.1 Installation location

The Industrial PC is designed for harsh operating conditions.

Nevertheless, please observe the following rules for installation:

- Avoid exposing the display to strong direct sunlight since it will make reading much more difficult.
- Do not expose the Industrial PC to direct heat.  
Make sure that there is sufficient ventilation at the rear panel or rather at the cooling fins on the rear panel.
  -  The device will automatically turn itself off when it overheats or the temperature falls below a certain point.
- For panel devices (front installation) allow extra space all the way around the rear housing and at least 15 mm more depth to ensure sufficient air circulation.
- Do not install the Industrial PC on equipment that strongly vibrates.  
If this is unavoidable, the device should be installed on shock absorbers and/or vibration dampers.
- In order to install the device on forklifts or similar vehicles, you **must take additional measures for shock damping and vibration minimization**.  
We have some device brackets designed specifically for this purpose in our accessories range. "Modification for mobile operation" (= additional securing of connectors and cables) is also available as an option.
- The Industrial PC may only be operated in positions ranging from 90° upward to the normal position (= facing forward) to 90° downward. The display is the point of reference.

 For more information on this, see also technical data in chapter 15.1.2.

## 8.2 Tightening torques for screws

Size of screw	Tightening torque
M3	0.6 Nm = 60 Ncm
M4	1.2 Nm = 120 Ncm
M5	2.5 Nm = 250 Ncm
M6	4.0 Nm = 400 Ncm

- ❗ To ensure that the Industrial PC housing is waterproof, you must tighten all screws (especially those in the housing rear panel) with the torques listed above.



### Warning

Before and while closing the housing, for example after upgrades or servicing, check that all seals are positioned correctly.







### Caution

Excessively high torques will cause the screws and potentially also the housing of the Industrial PC to be damaged.

- ❗ If using accessories, the torques for screws may differ. Please refer to the product information provided for the accessories in question.

## 8.3 Tools

You will need some of the following tools to install and / or open the Industrial PC:

- Torx screwdriver, TX 10 
- Torx screwdriver, TX 20
- Allen key, size 2.5 
- Allen key, size 4.0
- Allen key, size 5.0
- Phillips cross-head screwdriver, size 1 (PH 1) 
- Phillips cross-head screwdriver, size 2 (PH 2)
- Socket wrench, SW 5.0 
- Socket wrench, SW 5.5
- Socket wrench, SW 7.0

## 8.4 Connector protection

To protect the connector area of the Industrial PC against liquids, dust, and aggressive vapors, you have to use a connector protection.

Connector protections are available as an optional accessory for each noax Industrial PC. Accompanying product information explains the installation and use.

## 8.5 Industrial PC Compact – C12 and C12P

Various device and wall brackets which can be attached to the rear T-slots are available as options for this housing type. The variable height adjustment (slot) and the design of the brackets offer a wide variety of installation options in different positions.



### Warning

Make sure that the device brackets are attached stable and secure.

### 8.5.1 Industrial PC Compact – C12

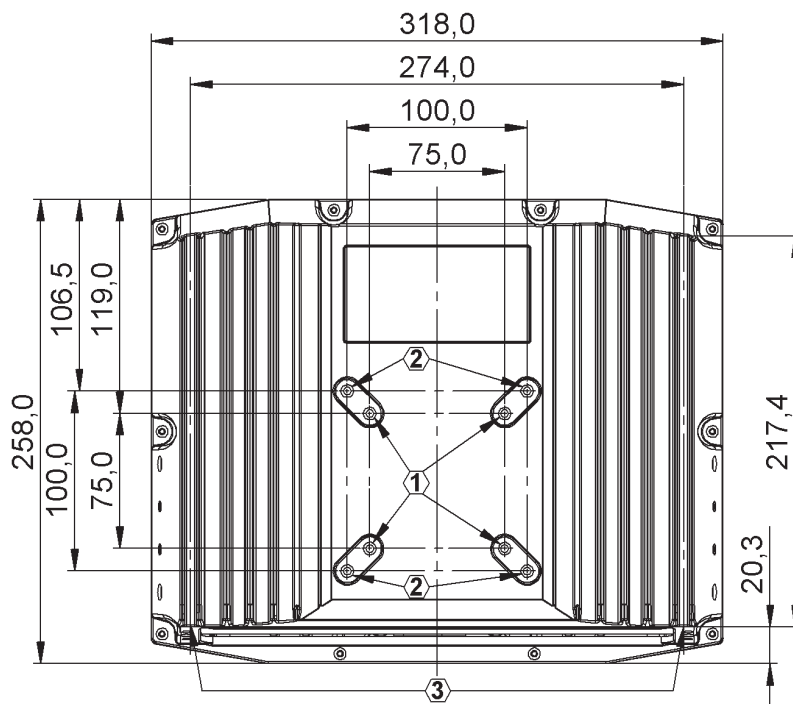


Fig. 8: Rear panel C12 (all dimensions in mm)

- ① VESA 100 mounting option with M5 thread (depth 7.5 mm / 0.3 inches)
- ② VESA 75 mounting option with M5 thread (depth 7.5 mm / 0.3 inches)
- ③ 2x T-slot as per DIN 508

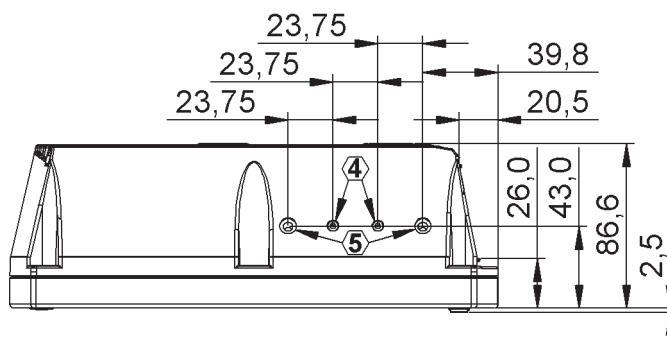


Fig. 9: Side view C12 (all dimensions in mm)

- ④ Side mounting option for accessories – M3 thread (depth 5.5 mm / 0.22 inches)
- ⑤ Side mounting option for accessories – M6 thread (depth 11.0mm / 0.43 inches)

## 8.5.2 Industrial PC Compact – C12P

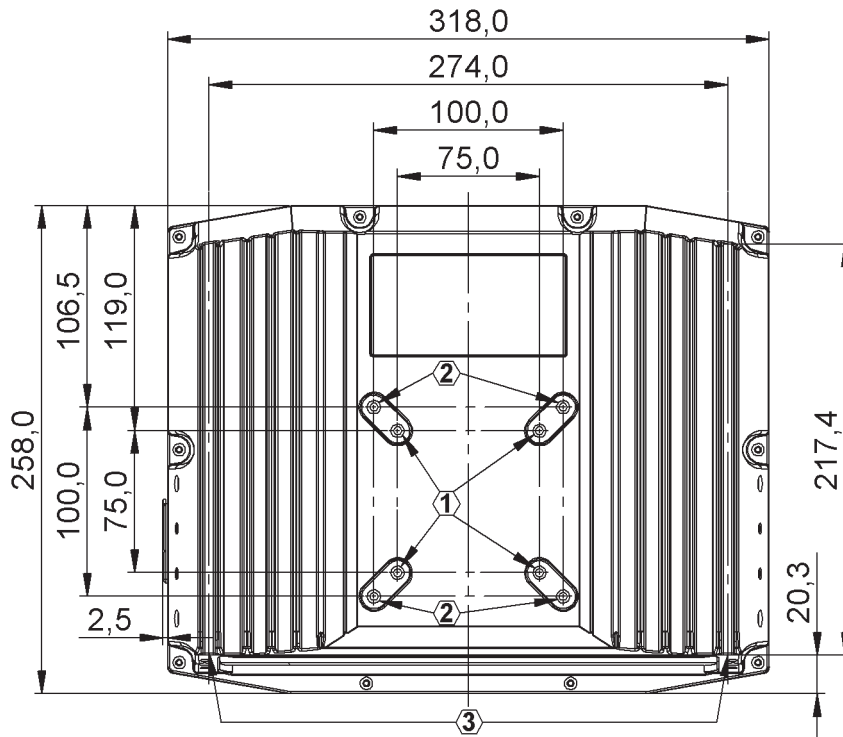


Fig. 10: Rear panel C12P (all dimensions in mm)

- ① VESA 100 mounting option with M5 thread (depth 7.5 mm / 0.3 inches)
- ② VESA 75 mounting option with M5 thread (depth 7.5 mm / 0.3 inches)
- ③ 2x T-slot as per DIN 508

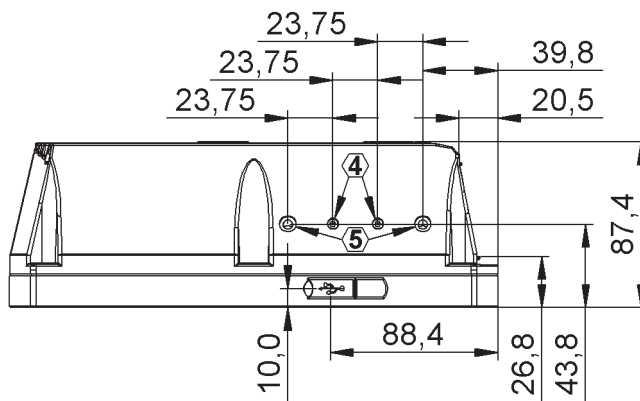


Fig. 11: Side view C12P (all dimensions in mm)

- ④ Side mounting option for accessories – M3 thread (depth 5.5 mm / 0.22 inches)
- ⑤ Side mounting option for accessories – M6 thread (depth 11.0mm / 0.43 inches)

### 8.5.3 T-slot nuts



Fig. 12: Long T-slot nuts and screws

The two guide rails with T-slots at the rear side of the Compact – C12 and C12P enclosure can be used to install the Industrial PC.

Two long T-slot nuts (DIN 508 / 7 mm deep thread) and screws (M5x10) with washers for mounting the long T-slot nuts are included in the scope of delivery

#### Usage:

- Install the IPC directly to a installation surface, e.g. Control cabinet door.
- Install the IPC onto the optional device and wall brackets.

### 8.5.4 Stoppers in the T-slots at the rear side of enclosure

At the top end of the two T-slots in the housing rear panel, two stoppers (= short T-slot nuts) are firmly inserted at the factory. These stoppers are there for safety reasons while installing or removing the Industrial PC. The IPC enclosure can slip on the long T-slot nuts only to the point where the stoppers are inserted. Therefore a slipping thru of the long T-slot nuts is prevented and the device cannot fall down.



#### Warning

For safety reasons, never remove the fixed small T-slot nuts (stoppers). Make sure that the long T-Slot nuts and the stoppers are securely attached.

### 8.5.5 VESA 100 mounting option

There are four threaded holes in the rear side of the Industrial PC as per “VESA (FDMI™) standard” – variant VESA MIS-D, 100, C.  
(100 mm / 3.9 inches distance in a square, M5 thread, depth 7.5 mm / 0.3 inches)



**In condition of delivery mounted screws only protect the threaded holes.**  
These screws are not suitable for mounting the device.

### 8.5.6 VESA 75 mounting option

There are four threaded holes in the rear side of the Industrial PC as per “VESA (FDMI™) standard” – variant VESA MIS-D, 75, C.  
(75 mm / 3.0 inches distance in a square, M5 thread, depth 7.5 mm / 0.3 inches)



**In condition of delivery mounted screws only protect the threaded holes.**  
These screws are not suitable for mounting the device.



## 8.6 Industrial PC Compact – C15, C15P, C19, C21W

Various device and wall brackets which can be attached to the rear T-slots are available as options for this housing types. The variable height adjustment (slot) and the design of the brackets offer a wide variety of installation options in different positions.



### Warning

Make sure that the device brackets are attached stable and secure.

### 8.6.1 Industrial PC Compact – C15

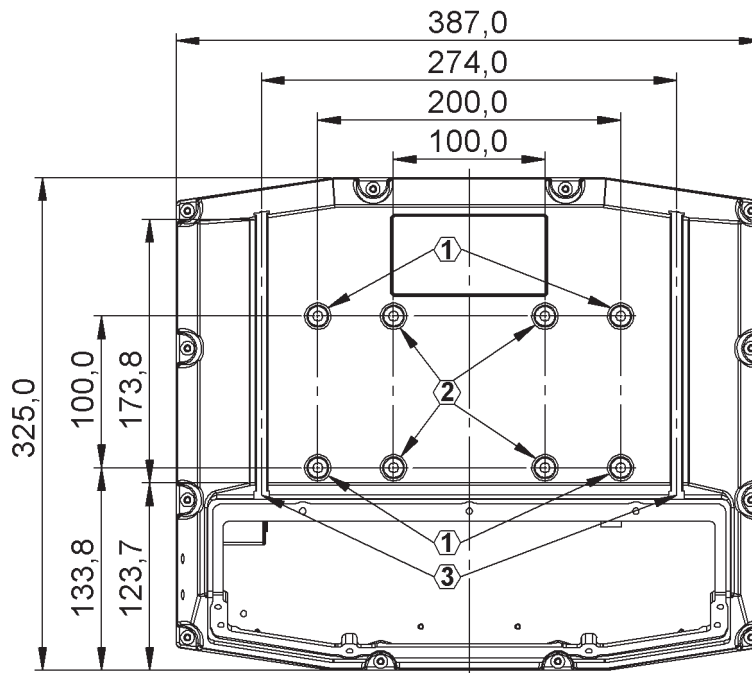


Fig. 13: Rear panel C15 (all dimensions in mm)

- ① VESA 200 x 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ② VESA 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ③ 2x T-slot as per DIN 508

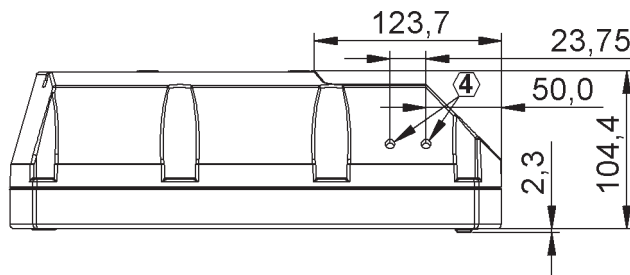


Fig. 14: Side view C15 (all dimensions in mm)

- ④ Side mounting option for accessories – M6 thread (depth 10.0mm / 0.39 inches)

## 8.6.2 Industrial PC Compact – C15P

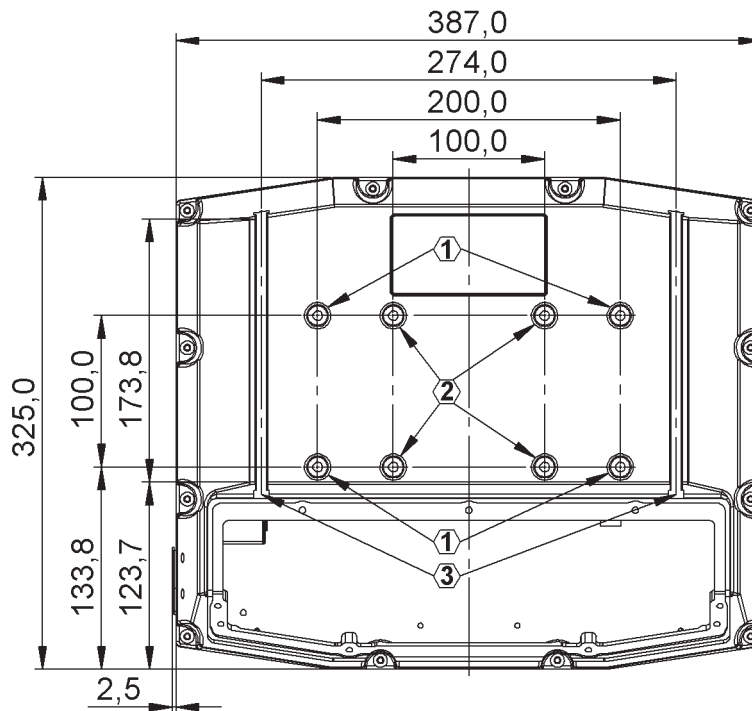


Fig. 15: Rear panel C15P (all dimensions in mm)

- ① VESA 200 x 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ② VESA 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ③ 2x T-slot as per DIN 508

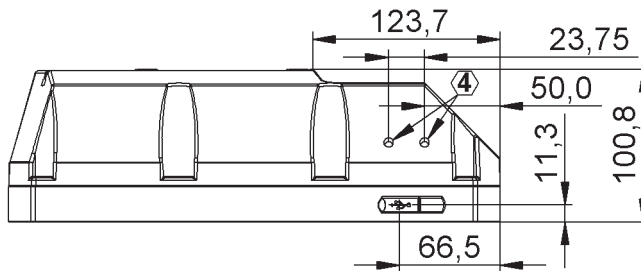


Fig. 16: Side view C15P (all dimensions in mm)

- ④ Side mounting option for accessories – M6 thread (depth 10.0mm / 0.39 inches)

### 8.6.3 Industrial PC Compact – C19

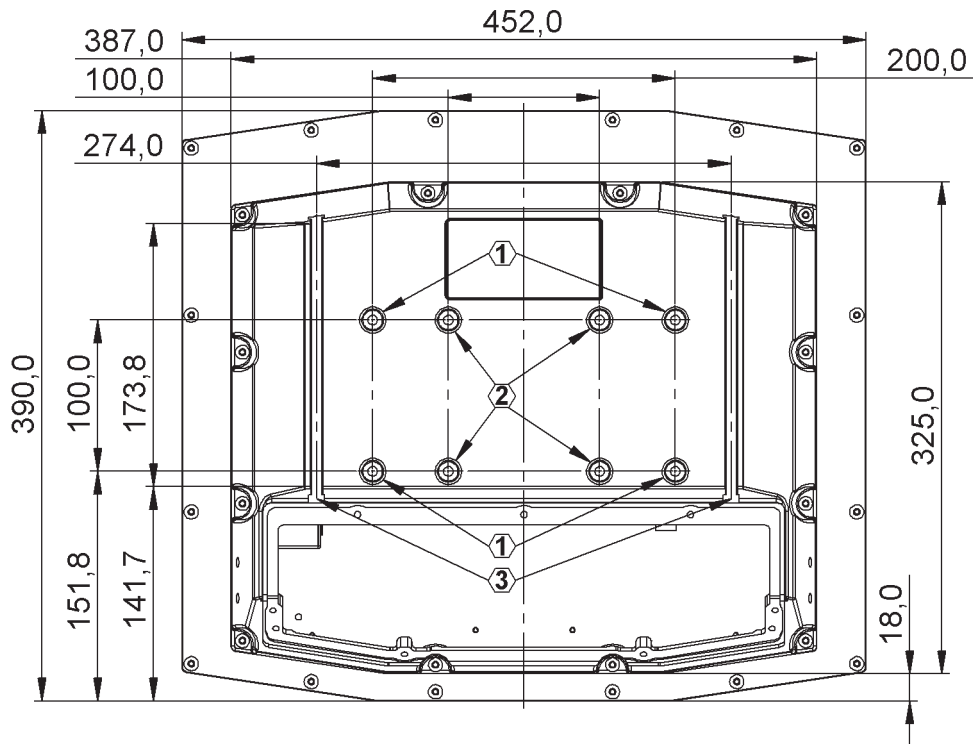


Fig. 17: Rear panel C19 (all dimensions in mm)

- ① VESA 200 x 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ② VESA 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ③ 2x T-slot as per DIN 508

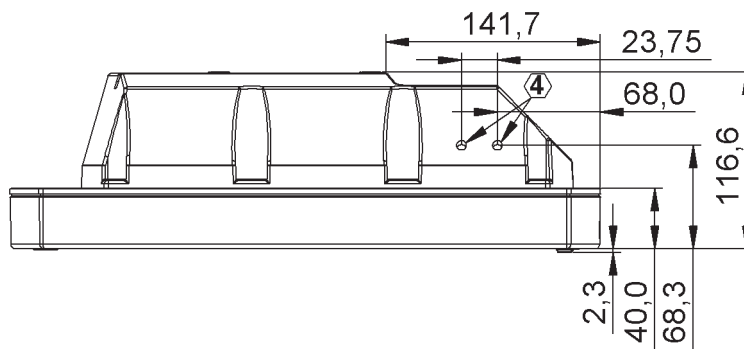


Fig. 18: Side view C19 (all dimensions in mm)

- ④ Side mounting option for accessories – M6 thread (depth 10.0mm / 0.39 inches)

#### 8.6.4 Industrial PC Compact – C21W

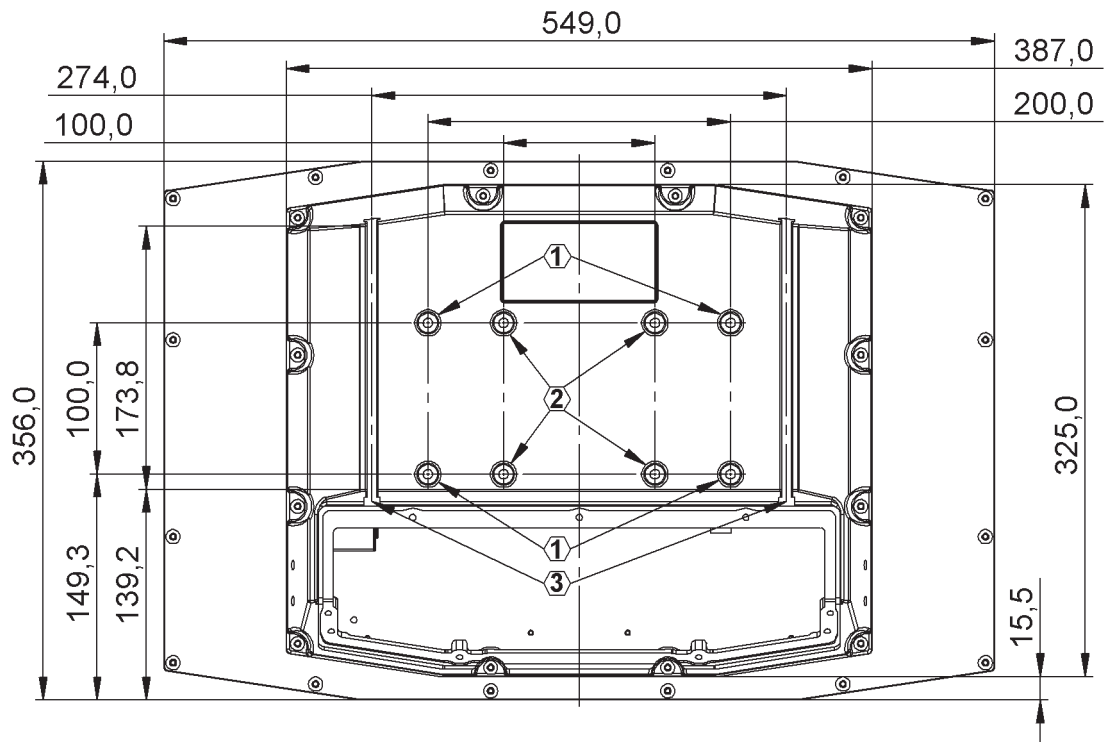


Fig. 19: Rear panel C21W (all dimensions in mm)

- ① VESA 200 x 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ② VESA 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ③ 2x T-slot as per DIN 508

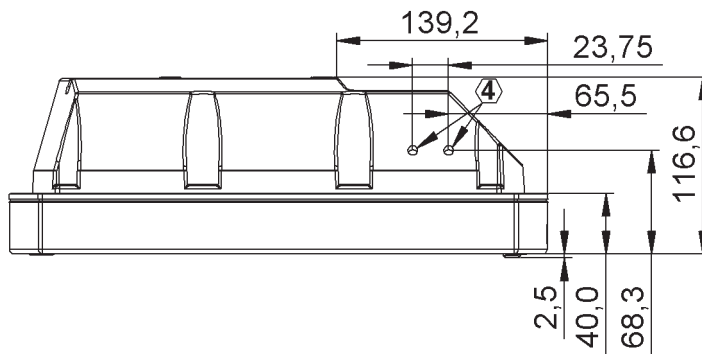


Fig. 20: Side view C21W (all dimensions in mm)

- ④ Side mounting option for accessories – M6 thread (depth 10.0mm / 0.39 inches)

### 8.6.5 T-slot nuts

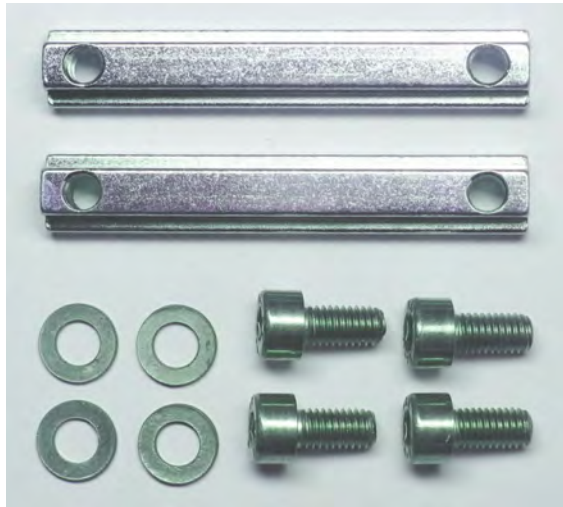


Fig. 21: Long T-slot nuts and screws

The two guide rails with T-slots at the rear side of the Compact – C15, C15P, C19 and C21W enclosure can be used to install the Industrial PC.

Two long T-slot nuts (DIN 508 / 7 mm deep thread) and screws (M5x10) with washers for mounting the long T-slot nuts are included in the scope of delivery

#### Use:

- Install the IPC directly to a installation surface, e.g. Control cabinet door.
- Install the IPC onto the optional device and wall brackets.

### 8.6.6 Stoppers in the T-slots at the rear side of enclosure

At the top end of the two T-slots in the housing rear panel, two stoppers (= short T-slot nuts) are firmly inserted at the factory. These stoppers are there for safety reasons while installing or removing the Industrial PC. The IPC enclosure can slip on the long T-slot nuts only to the point where the stoppers are inserted. Therefore a slipping thru of the long T-slot nuts is prevented and the device cannot fall down.



#### Warning

For safety reasons, never remove the fixed small T-slot nuts (stoppers). Make sure that the long T-Slot nuts and the stoppers are securely attached.

### 8.6.7 VESA 200 x 100 mounting option

There are four threaded holes in the rear side of the Industrial PC as per “VESA (FDMI™) standard” – variant VESA MIS-E, C. (M6 thread, depth 7.5 mm / 0.3 inches) **Deviating from the standard, only the four outer holes can be used.**



**In condition of delivery mounted screws only protect the threaded holes.** These screws are not suitable for mounting the device.

### 8.6.8 VESA 100 mounting option

There are four threaded holes in the rear side of the Industrial PC as per “VESA (FDMI™) standard” – variant VESA MIS-D, 100, C. (100 mm / 3.9 inches distance in a square, M6 thread, depth 7.5 mm / 0.3 inches)



**In condition of delivery mounted screws only protect the threaded holes.** These screws are not suitable for mounting the device.

## 8.7 Industrial PC Steel – S12 and S15

This housing is mounted with the four threaded sleeves on its rear. These are closed M5 insert nuts. For this reason, it is important to check that the screws used are of the correct length.

- ❗ **The screws must not be screwed into the insert nuts by more than 0.31 inches / 8 mm.**

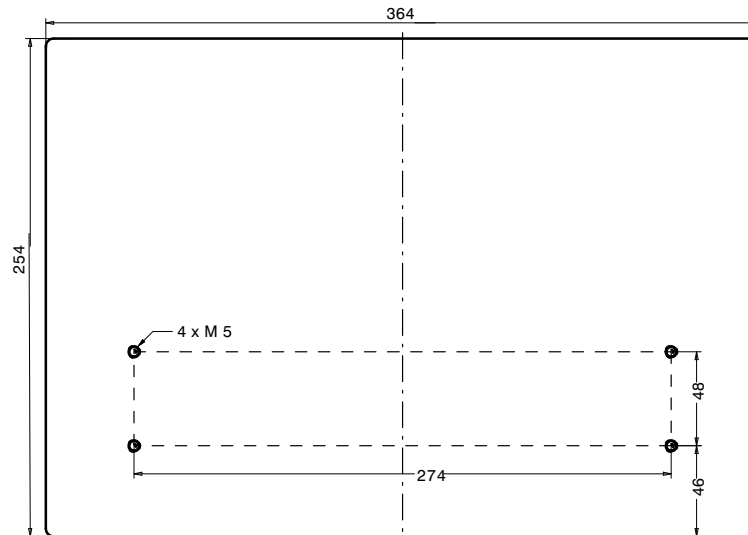


Fig. 22: Rear panel S12 (all dimensions in mm)

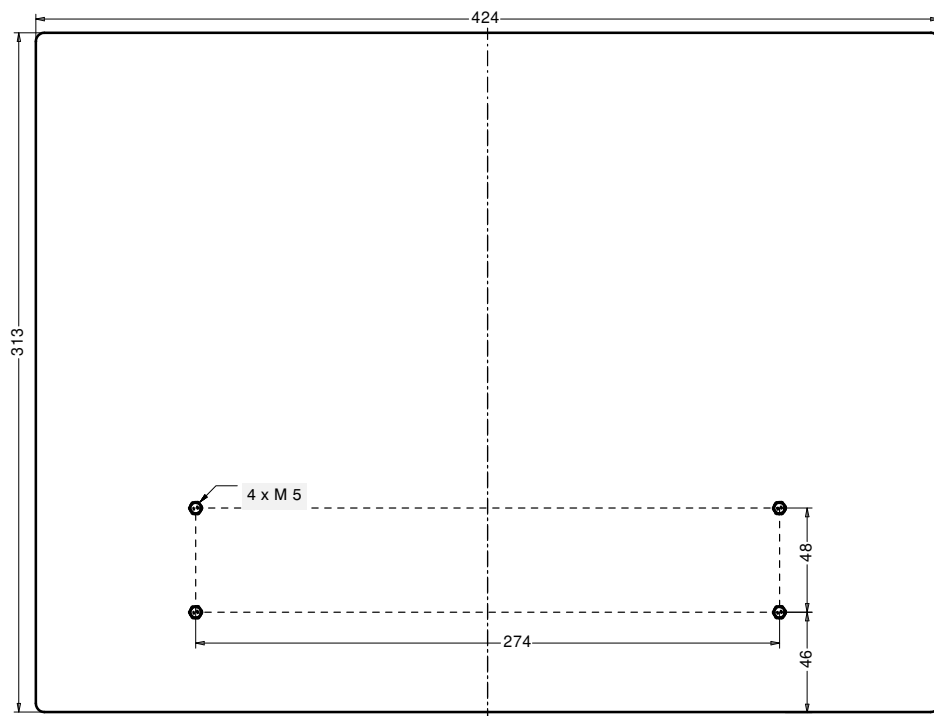


Fig. 23: Rear panel S15 (all dimensions in mm)

- ❗ **In condition of delivery mounted screws only protect the threaded holes.**  
These screws are not suitable for mounting the device.

## 8.8 Industrial PC Steel – S15-G2 and S19

### 8.8.1 Industrial PC Steel – S15-G2

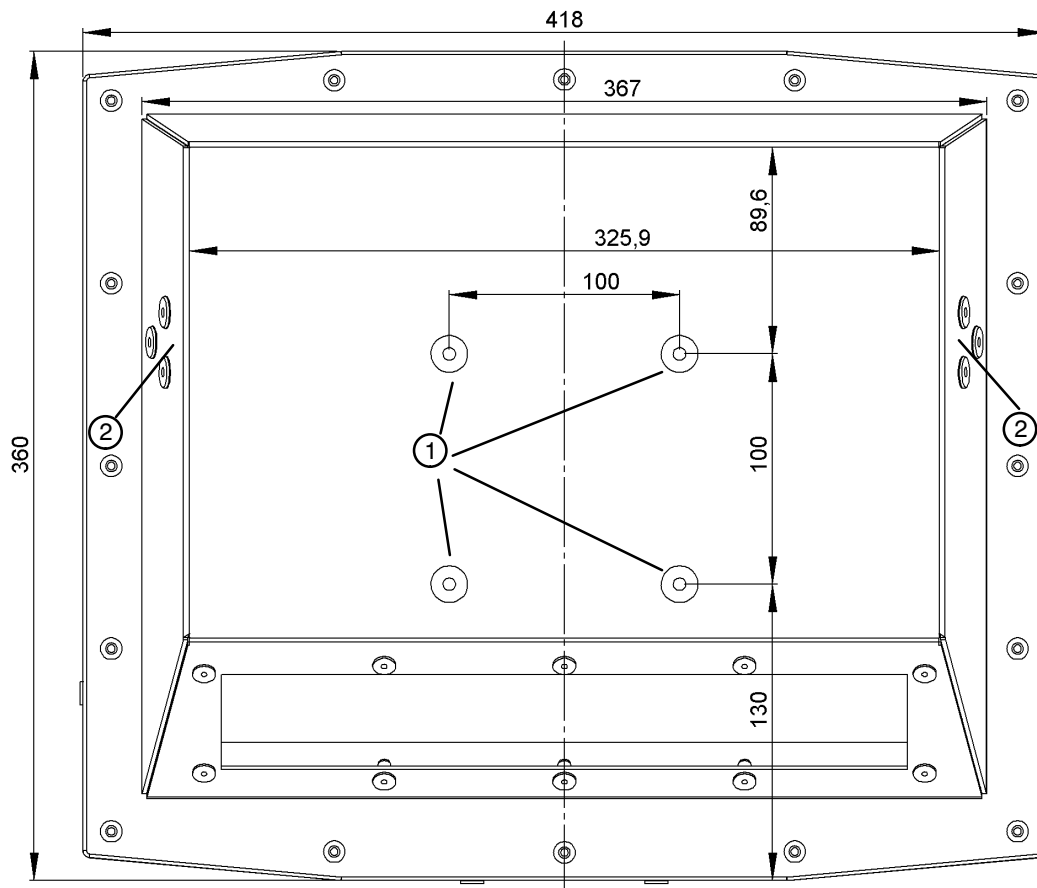


Fig. 24: Rear panel S15-G2 (all dimensions in mm)

- ① VESA 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ② Side mounting option for device bracket

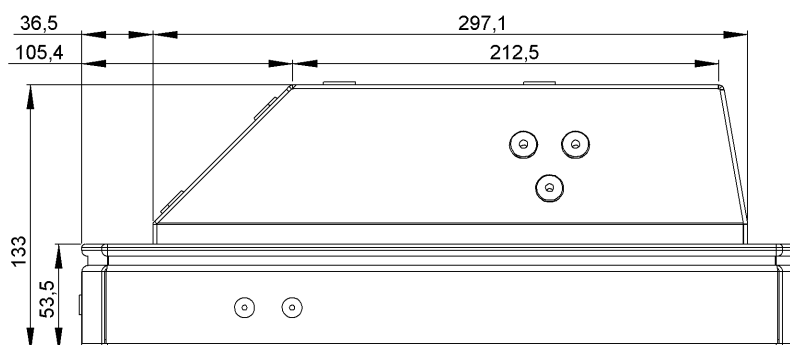


Fig. 25: Side view S15-G2 (all dimensions in mm)



#### Warning

Make sure that the device is attached stable and secure. When choosing your mounting option, pay attention to the weight of the device.



See also the technical data in Chapter 15

## 8.8.2 Industrial PC Steel – S19

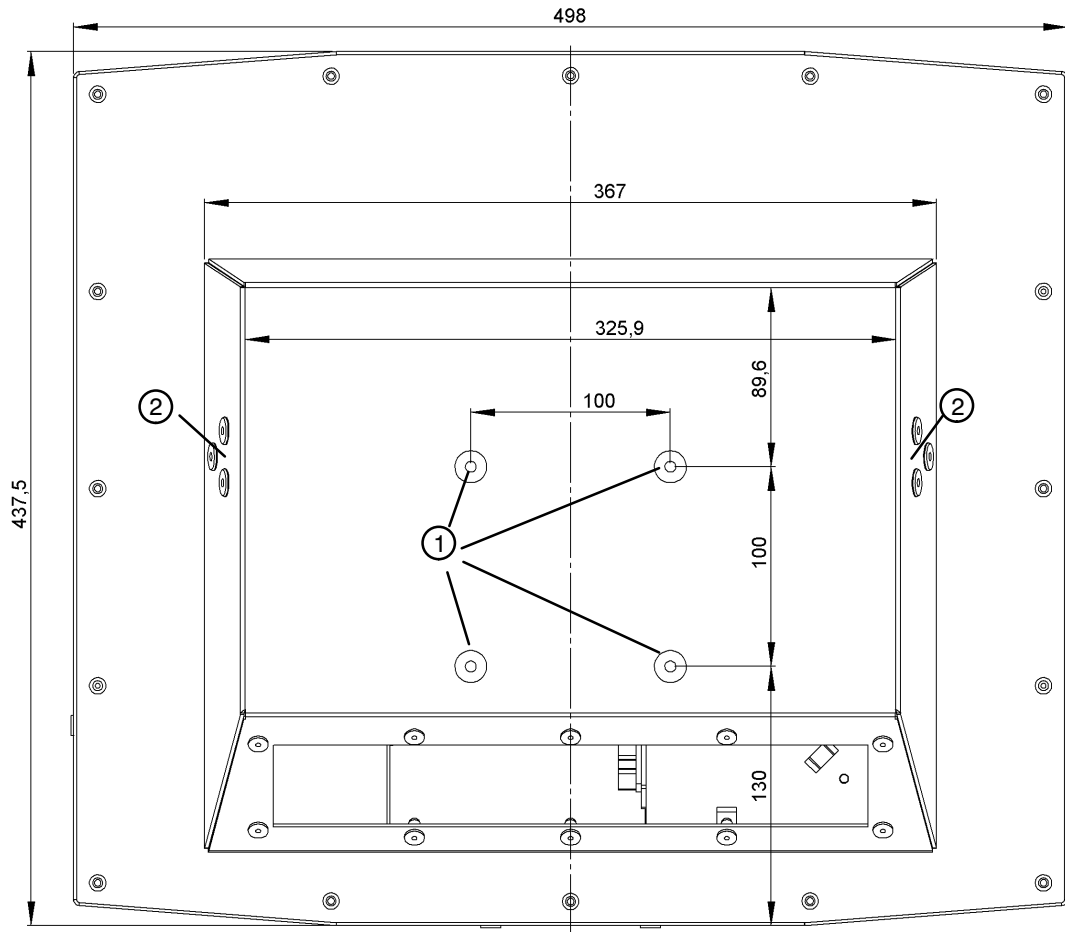


Fig. 26: Rear panel S19 (all dimensions in mm)

- ① VESA 100 mounting option with M6 thread (depth 7.5 mm / 0.3 inches)
- ② Side mounting option for device bracket

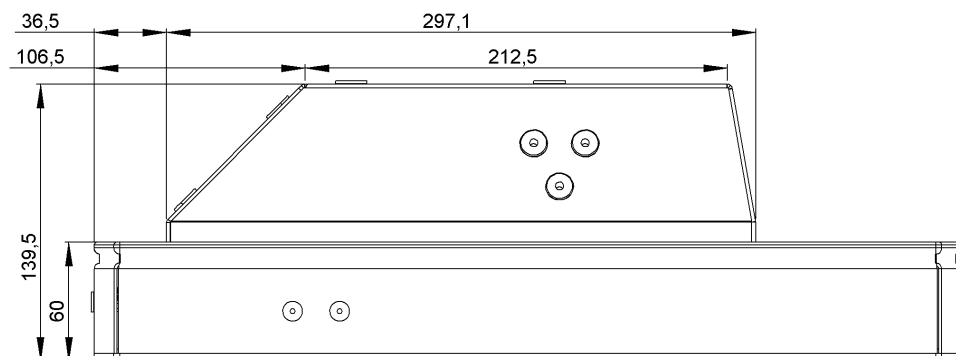


Fig. 27: Side view S19 (all dimensions in mm)



### Warning

Make sure that the device is stable and attached securely. When choosing your mounting option, pay attention to the weight of the device.



See also the technical data in Chapter 15



### 8.8.3 VESA 100 mounting option

There are four threaded holes in the rear side of the Industrial PC as per “VESA (FDMI™) standard” – variant VESA MIS-D, 100, C.  
(100 mm / 3.9 inches distance in a square, M6 thread, depth 7.5 mm / 0.3 inches)



**In condition of delivery mounted screws only protect the threaded holes.**

These screws are not suitable for mounting the device.

### 8.8.4 Side mounting options

The drill holes in the side of the housing rear cover are provided for the device mounting bracket. A range of accessory components can be mounted on these brackets.

Some accessory components for side mounting (optional) are listed below:

- noax Wall mount bracket for S15-G2 and S19
- noax Table stand for S15-G2 and S19

## 8.9 Industrial PC Panel – P15

### 8.9.1 Installation cut-out for the Industrial PC Panel – P15

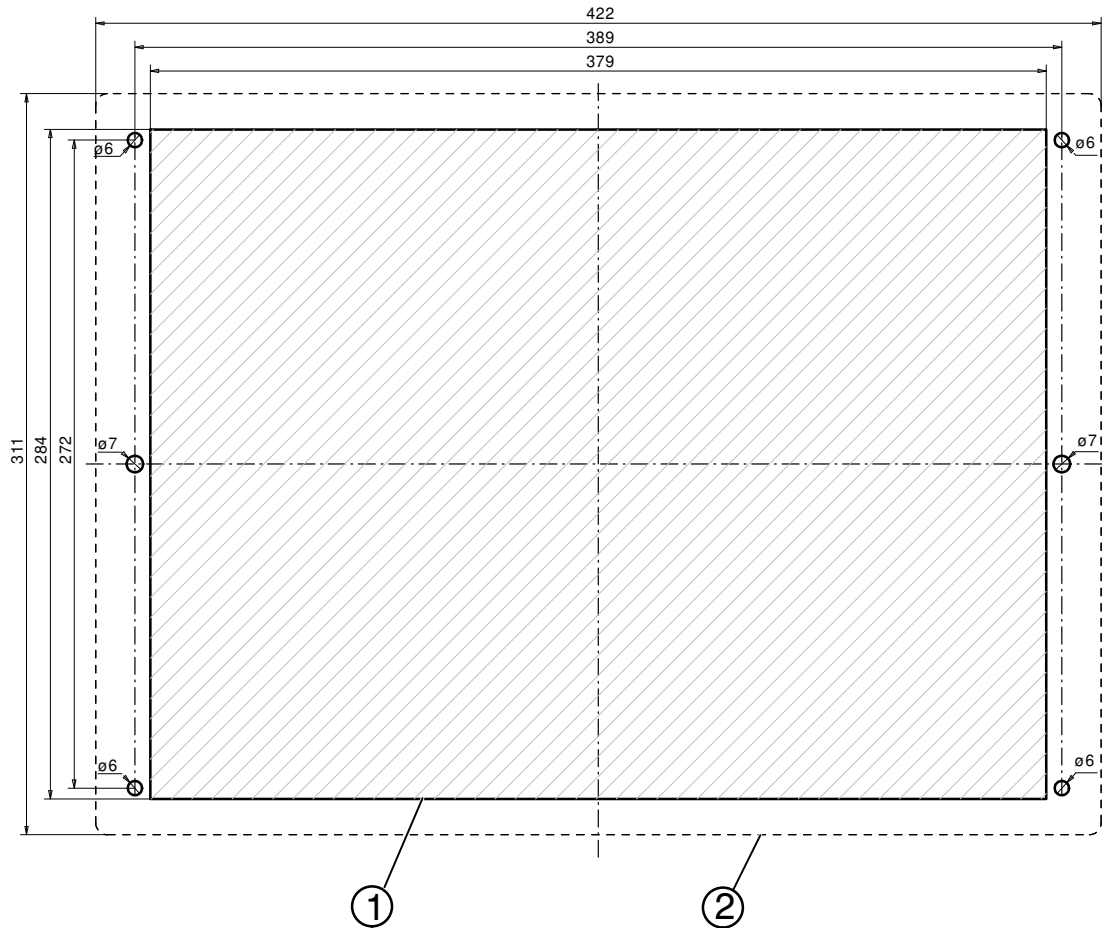


Fig. 28: Installation cut-out for P15 installation (all dimensions in mm)

- ① Cut-out for installation
- ② Dimensions of the front plate of the Industrial PC P15

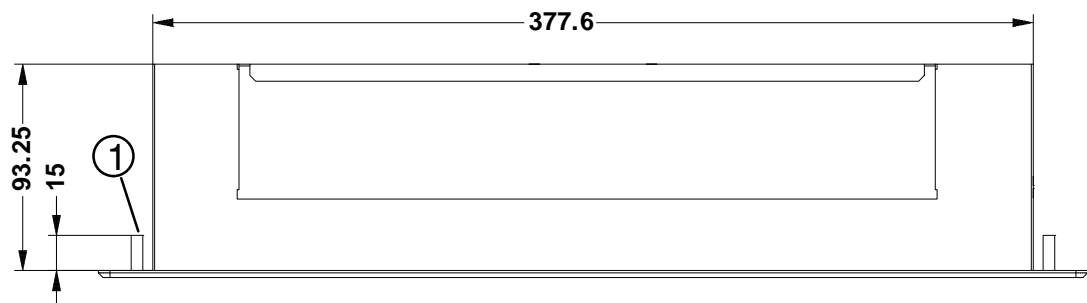


Fig. 29: Side view P15 (all dimensions in mm)

- ① 4x threaded bolts M5x15



#### Warning

To ensure sufficient air circulation, you should provide at least 15 mm additional depth for installation as well as extra space all the way around the rear housing.

## 8.10 Industrial PC Steel – S15P, S15R, S19P, S19R, S21WP and S21WR

Device and wall brackets which are attached to the rear VESA 100 mounting option are available as options for this housing type.

- ① **Screws must not be screwed into the M6 threads by more than 0.28 inches / 7.0 mm.**



### Warning

Make sure that the device brackets are attached stable and secure.

### 8.10.1 Industrial PC Steel – S15P and S15R

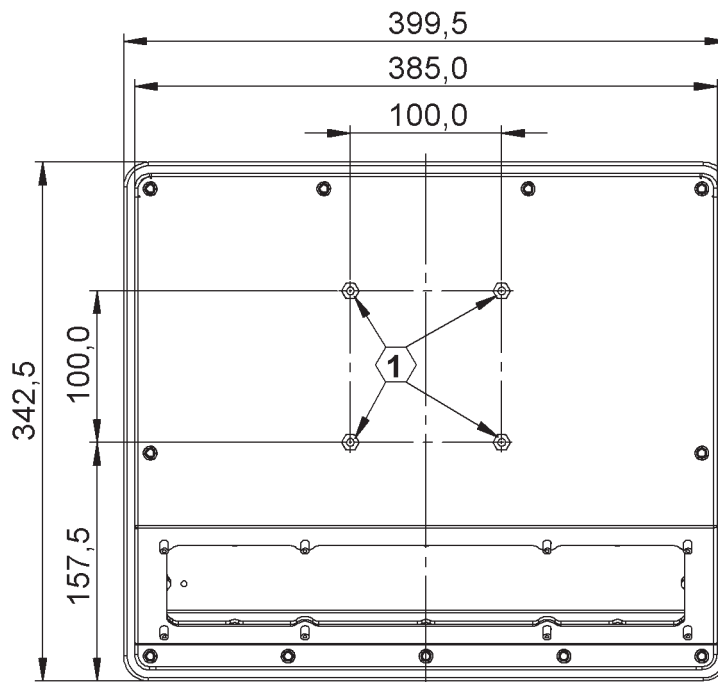


Fig. 30: Rear panel S15P (all dimensions in mm)

- ① VESA 100 mounting option with M6 thread (depth 7.0 mm / 0.28 inches)

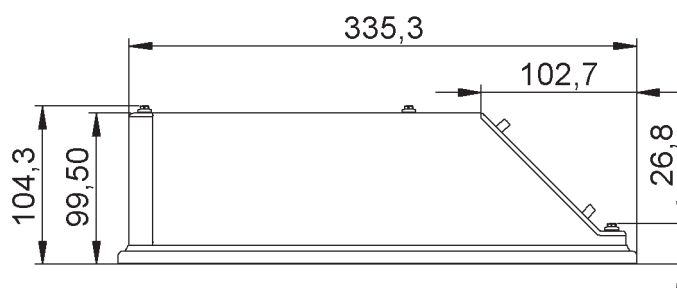


Fig. 31: Side view S15P (all dimensions in mm)

## 8.10.2 Industrial PC Steel – S19P and S19R

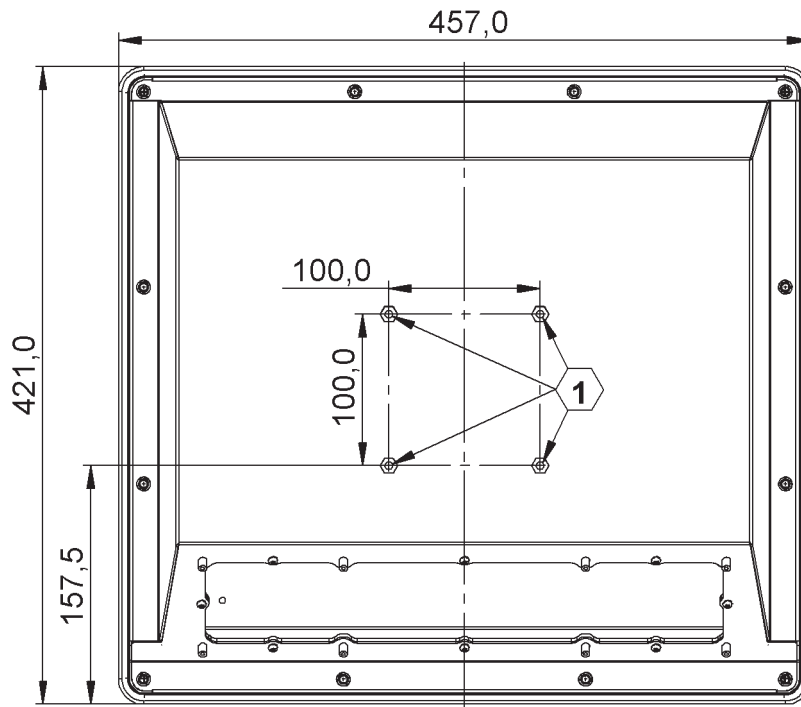


Fig. 32: Rear panel S19P (all dimensions in mm)

- ① VESA 100 mounting option with M6 thread (depth 7.0 mm / 0.28 inches)

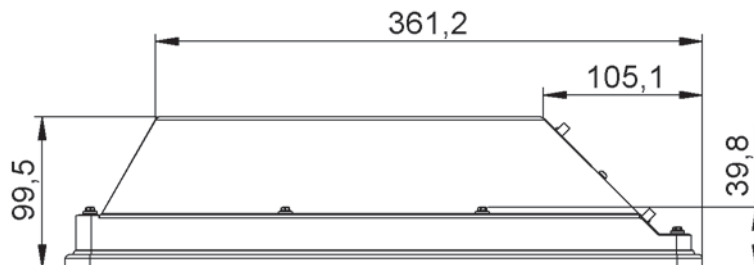


Fig. 33: Side view S19P (all dimensions in mm)

### 8.10.3 Industrial PC Steel – S21WP and S21WR

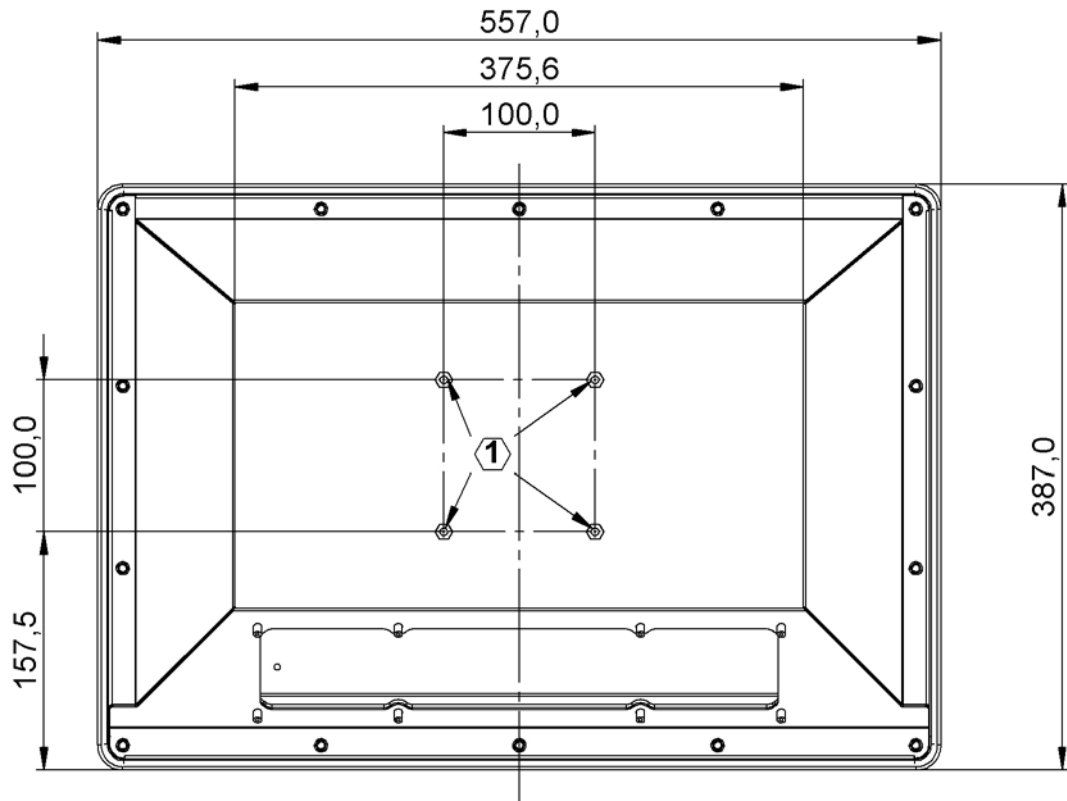


Fig. 34: Rear panel S21WP (all dimensions in mm)

- ① VESA 100 mounting option with M6 thread (depth 7.0 mm / 0.28 inches)

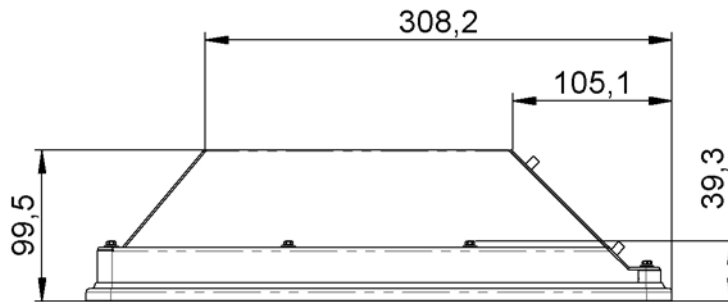


Fig. 35: Side view S21WP (all dimensions in mm)

### 8.10.4 VESA 100 mounting option

There are four threaded holes in the rear side of the Industrial PC as per “VESA (FDMI™) standard” – variant VESA MIS-D, 100, C. (100 mm / 3.9 inches distance in a square, M6 thread, depth 7.0 mm / 0.28 inches)



**In condition of delivery mounted screws only protect the threaded holes.**  
These screws are not suitable for mounting the device.

## 9 Connectors and interfaces



### Warning

When connecting cables, pay attention to use the proper connector (Power, RS232, ...), to plug the connector in the right orientation and to fully plug the connector!



noax recommends the usage of the connector locking (if available)!  
This secures the cable connection.



### Warning

For self-assembled cables pay attention to the correct connector pin assignment!



### Warning

Do not exceed the maximum permitted supply current of 1.0 A when supplying power to external devices.



You can find further information on the available interface modules on our website [www.noax.com](http://www.noax.com).

### 9.1 Connector for equipotential bonding



This connector isn't available at enclosure C12, C12P and S12.



Fig. 36: Connector area of a S21WR enclosure



Threaded bolt for equipotential bonding – M4 x 8mm

At the connector area of the Industrial PC enclosure (except C12, C12P and S12 enclosure) a threaded bolt for connecting equipotential bonding is located.

With this bolt the enclosure can be connected to a equipotential bonding terminal of a machine or the building.



**The protective grounding (safety-earth) is connected by the power supply.**

## 9.2 Connector area in general

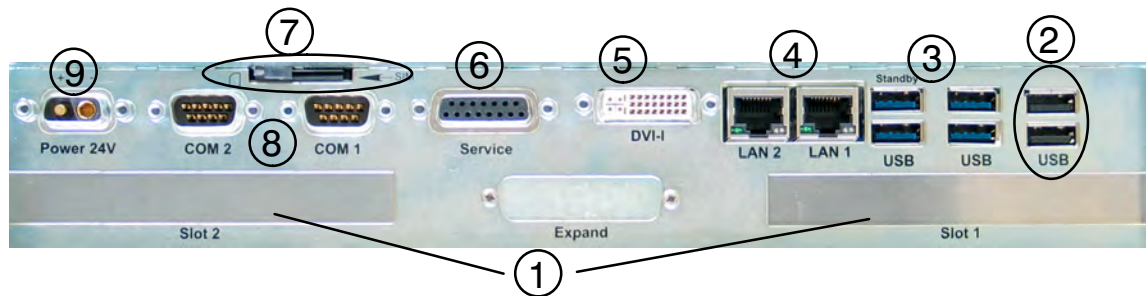


Fig. 37: Connector area using the example of the mainboard N11G

- ① Free PCI/PCI Express card slots
- ② Two USB 2.0 ports
- ③ Four USB 3.0 ports
- ④ Two LAN ports with status LEDs
- ⑤ DVI monitor port
- ⑥ Service port
- ⑦ SIM card slot
- ⑧ Two COM interface ports
- ⑨ Power supply



### Warning

Connect and disconnect all device connectors only when de-energized.



There are no USB 2.0 ports available in the mainboard N11C variant. The openings in the connector area are covered in this case.

## 9.3 Connector area C12 and C12P

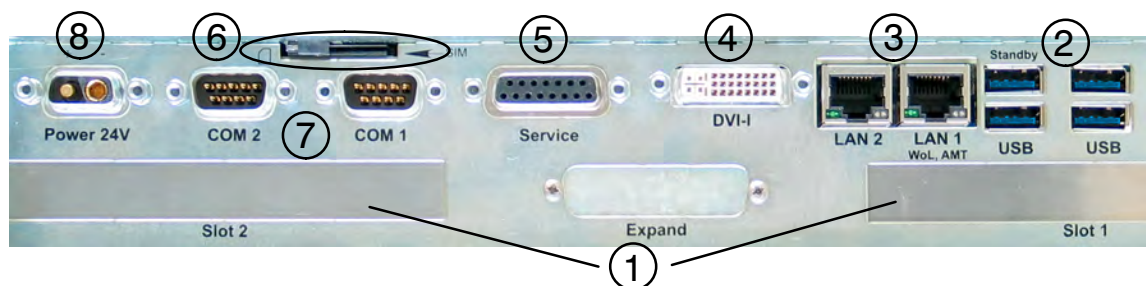


Fig. 38: Connector area of C12X-N11G

- ① Free PCI/PCI Express card slots (Slot 1 low profile PCI/PCIe slot)
- ② Four USB 3.0 ports
- ③ Two LAN ports with status LEDs
- ④ DVI monitor port
- ⑤ Service port
- ⑥ SIM card slot
- ⑦ Two COM interface ports
- ⑧ Power supply



### Warning

Connect and disconnect all device connectors only when de-energized.

## 9.4 Connector area C15, C15P, C19, C21W, S15P, S15R, S19P, S19R, S21WP, S21WR with option “internal power supply”

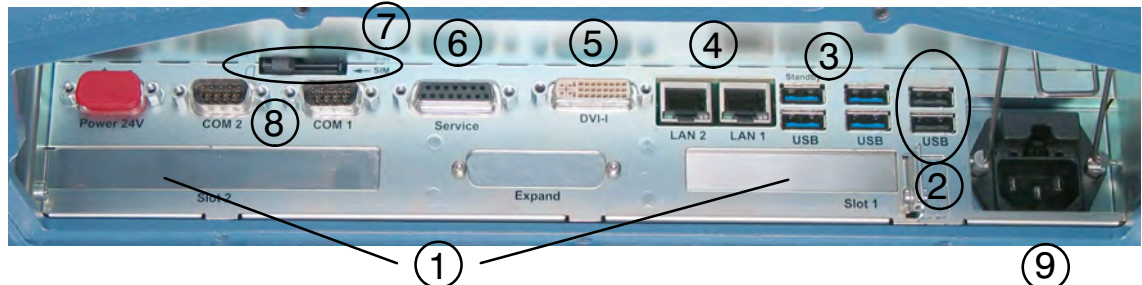


Fig. 39: Connector area of C19-N11G with the option “internal power supply”

- ① Free PCI/PCI Express card slots (Slot 1 low profile PCI/PCIe slot)
- ② Two USB 2.0 ports
- ③ Four USB 3.0 ports
- ④ Two LAN ports with status LEDs
- ⑤ DVI monitor port
- ⑥ Service port
- ⑦ SIM card slot
- ⑧ Two COM interface ports
- ⑨ Mains input connector with two fuses



### Warning

Use only the mains power cord that was supplied with the device!  
Only this cable used in conjunction with the safety catch from the mains input connector can ensure secure locking of the plug connection.



### Warning

Please ensure that the mains power cord is not damaged.



### Warning

Connect and disconnect all device connectors only when de-energized.



## 9.5 Connector area S15 with option “internal power supply”

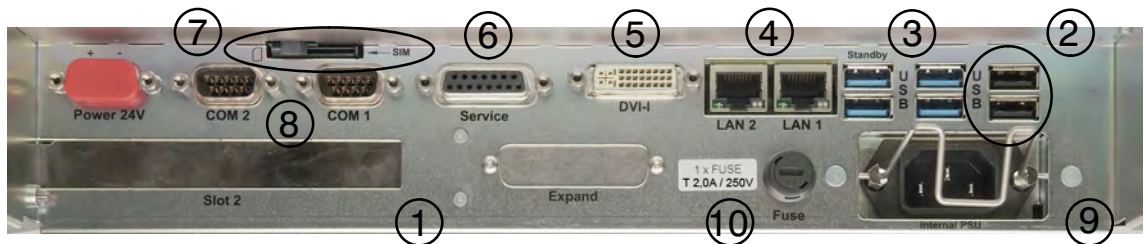


Fig. 40: Connector area of S15-N11G with the option “internal power supply”

- ① Free PCI/PCI Express card slot
- ② Two USB 2.0 ports
- ③ Four USB 3.0 ports
- ④ Two LAN ports with status LEDs
- ⑤ DVI monitor port
- ⑥ Service port
- ⑦ SIM card slot
- ⑧ Two COM interface ports
- ⑨ Mains input connector
- ⑩ Supply voltage input fuse



### Warning

Use only the mains power cord that was supplied with the device!  
Only this cable used in conjunction with the safety catch from the mains input connector can ensure secure locking of the plug connection.



### Warning

Please ensure that the mains power cord is not damaged.



### Warning

Connect and disconnect all device connectors only when de-energized.

## 9.6 Connector area of S15-G2 and S19

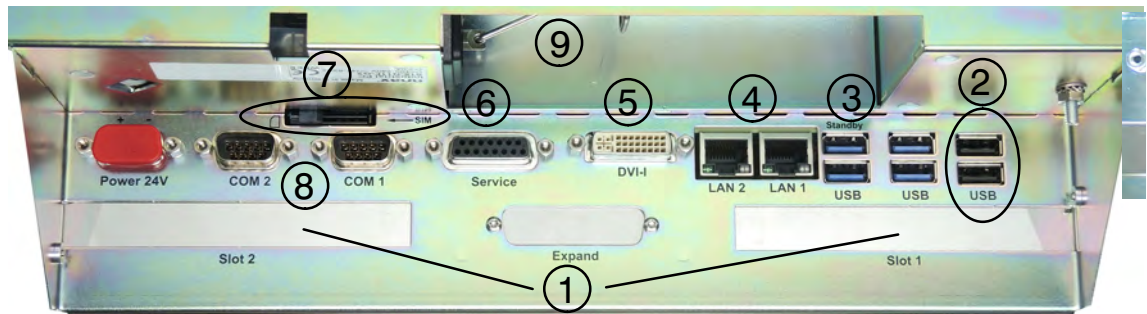


Fig. 41: Connector area of S15-G2 with N11G mainboard

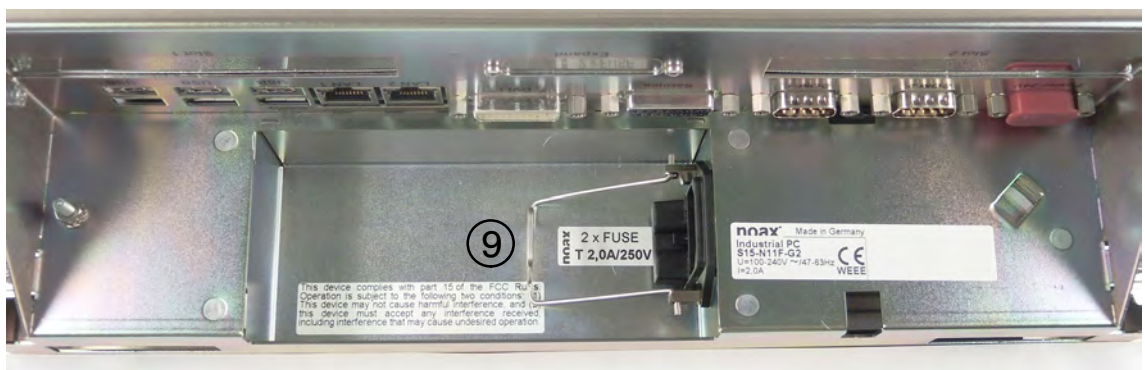


Fig. 42: Area with mains input connector and fuses

- ① Free PCI/PCI Express card slots
- ② Two USB 2.0 ports
- ③ Four USB 3.0 ports
- ④ Two LAN ports with status LEDs
- ⑤ DVI monitor port
- ⑥ Service port
- ⑦ SIM card slot
- ⑧ Two COM interface ports
- ⑨ Area with mains input connector and fuses



### Warning

Use only the mains power cord that was supplied with the device!  
Only this cable used in conjunction with the safety catch from the mains input connector can ensure secure locking of the plug connection.



### Warning

Please ensure that the mains power cord is not damaged.



### Warning

Connect and disconnect all device connectors only when de-energized.

## 9.7 Standby supply for the USB ports

In standby mode the USB ports in the connector area will be supplied with power ex works. This function can be deactivated using the nSMART™ software.

 See Chapter 11.3

- ❗ If standby mode is deactivated, these USB ports are supplied with power in the usual way.

## 9.8 SIM card



Fig. 43: SIM card slot at connector area

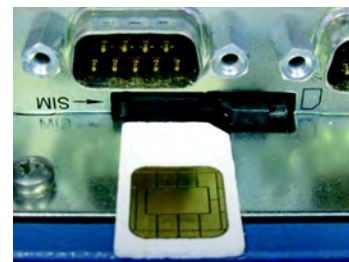


Fig. 44: Inserting the SIM card

This slot is intended for SIM cards that are required for certain modules (e.g. GPRS or UMTS data cards).

The slot is connected to the lower Mini PCIe socket.

Insert the SIM card into the slot with the chip side facing up as shown in the picture (Fig. 44) .

## 9.9 LAN port

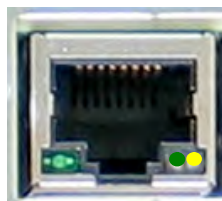


Fig. 45: LAN LEDs

Left LED (green)	Right LED (green/yellow)
Lights up when connection has been established	Data speed 1 GBit green
Flashes during data transfer	Data speed 100 MBit yellow
	Data speed 10 MBit off

## 9.10 Front USB port / Side USB port

The nSMART™ software can be used to activate or deactivate the Front USB port / Side USB port. When the port is deactivated, it is completely disconnected from the supply voltage.

① **The Front USB port / Side USB port is activated as factory default setting.**

The installed rubber cover and an additional internal seal prevent the ingress of liquids.



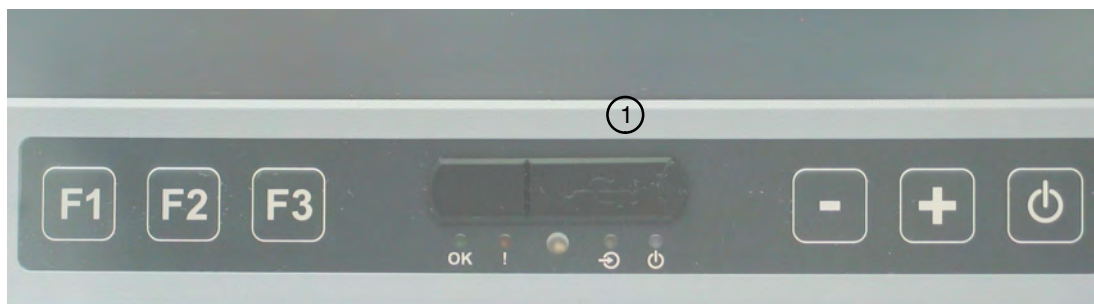
### Caution

When not in use, seal the Front USB port / Side USB port with the rubber cover.

① Spare rubber covers can be ordered via the noax hotline.

### 9.10.1 Front USB port

① **Available at enclosure types C12, C15, C19 and C21W**

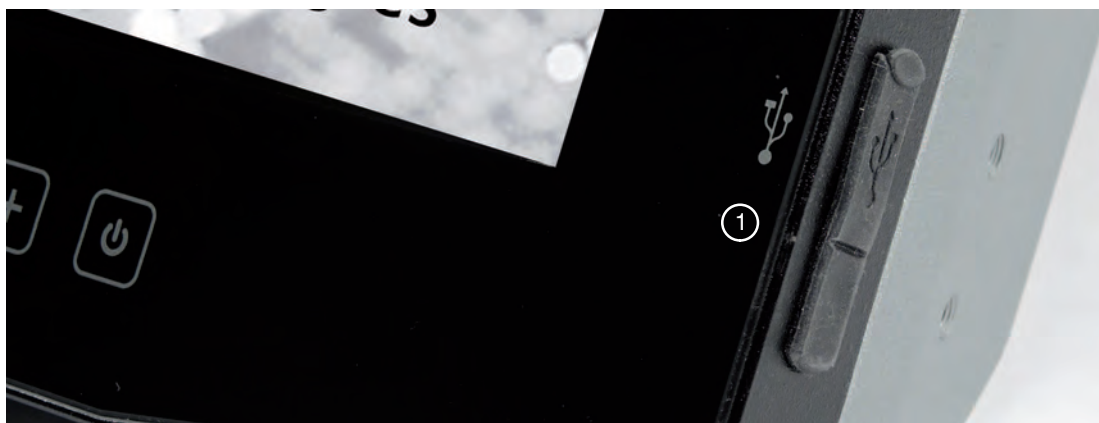


① Front USB port

### 9.10.2 Side USB port

① **Available at enclosure types C12P and C15P**

The Side USB port is located on the right side area of the enclosure front.



① Front USB port

## 9.11 SATA mode AHCI/RAID

AHCI is a standard for serial ATA controllers, which enables the software to communicate with these controllers, enabling faster access to hard drive data, such as by using NCQ.

AHCI is set as default in BIOS. Older operating systems (e.g., Windows XP) do not support AHCI mode by default. For this reason, corresponding AHCI drivers must be loaded when installing the operating system so the hard drive is detected. (cf. "F6 Disc" in Windows XP).

Alternatively, there is also the possibility of switching to the older IDE mode in BIOS under "Integrated Peripherals" and "SATA Device". However, this renders the advantages of AHCI unusable.

- ① noax pre-installed operating systems do not support IDE mode.
- ① The corresponding AHCI drivers are available from our support.

The use of **RAID** functions is **only** possible with mainboard variant **N11G** and **N11F** and if **two SATA drives** are connected to the mainboard.

RAID functionality can be ordered as an option.

- ① RAID mode is not possible with the mainboard N11C variant.  
A second SATA drive cannot be used.



### Caution

It is possible to change to RAID mode in BIOS at a later time.  
But as a result the two SATA drives being used will be completely wiped.

## 9.12 PCIe (PCI Express) description



### Danger

PCIe cards must only be connected to the mainboard using adapter boards (back-planes). Slots directly on the mainboard have a special assignment. Connecting cards directly could cause irreversible damage to the connected card or the mainboard.

Depending on the chosen equipment, the Industrial PC has up to two slots for PCIe cards.

**Into the left “PCIe x8” slot (Slot 1)** x1 and x4 cards can also be inserted as well as x8 cards, even if they do not completely fill up the x8 slot.

**Into the right “PCIe x16” slot (Slot 2)** x1, x4, and x8 cards can also be inserted as well as x16 cards, even if they do not completely fill up the x16 slot.

Both PCIe slots have 4 electrical lanes each.

- PCIe x8 slot: 4 electrical lanes
- PCIe x16 slot: 4 electrical lanes



PCIe cards that are operated with fewer lanes than they actually have can be operated with one lane according to the specification, e.g., x16 card with x1 configuration. However, if several lanes are used, compatibility depends on the cards, e.g., x16 card with x4 configuration. In practice, however, the majority of PCIe cards are compatible with x2 and x4 configurations.

## 9.13 Information about power supply over noax interface modules

With a special adjustment to the noax interface modules, it is possible to apply a supply voltage of +5 V or +12 V (max. 1.0A) at Pin 4 or Pin 9.

The Industrial PC has to be opened and the interface module has to be disassembled in order to adjust the module.

The interface has to be marked in the connector area in line with the adjustment made to it.

Interfaces that have been pre-adjusted by noax at the factory are labeled accordingly in the connector area.

Optional labeling of serial interfaces COM1 / COM2:	
<b>P4/5 V</b>	RS232 interface with 5 V supply voltage output (5 V at Pin 4)
<b>P4/12 V</b>	RS232 interface with 12 V supply voltage output (12 V at Pin 4)
<b>P9/5 V</b>	RS232 interface with 5 V supply voltage output (5 V at Pin 9)
<b>P9/12 V</b>	RS232 interface with 12 V supply voltage output (12 V at Pin 9)
<b>RS422DP</b>	RS422DP interface with 5 V and 12 V supply voltage output (Dual Power: 12 V at Pin 4 and 5 V at Pin 9)
<b>RS485DP</b>	RS485DP interface with 5 V and 12 V supply voltage output (Dual Power: 12 V at Pin 4 and 5 V at Pin 9)
<b>RS232ISO</b>	RS232 interface galvanically isolated ( <u>no</u> supply voltage at Pin 4 or Pin 9)

① On the interface module for the galvanically isolated RS232 interface, you cannot set up a supply voltage at Pin 4 or Pin 9.

📖 See also technical specifications for noax interface modules at chapter 15.5



9.14 RS232 interface module

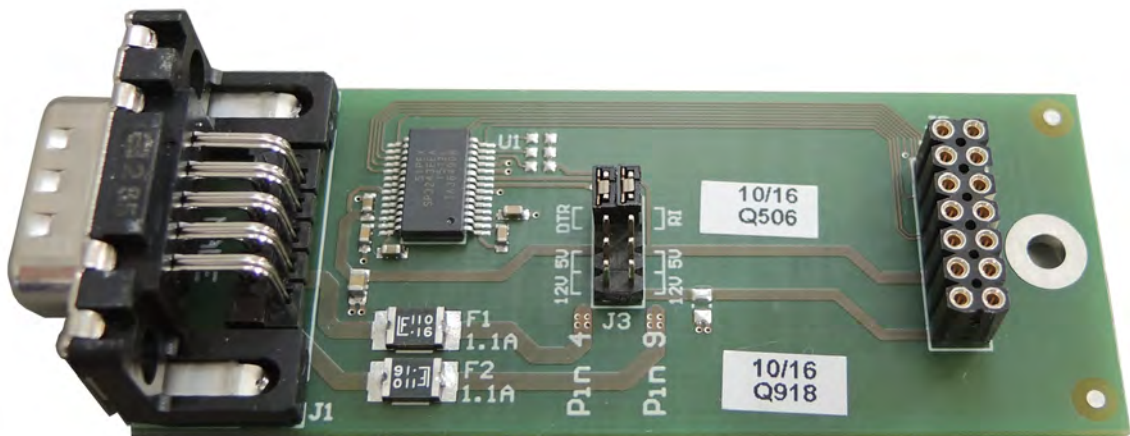


Fig. 46: RS232 interface module

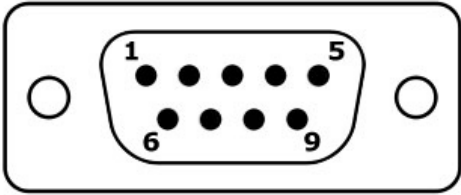
 For technical data, see Chapter 15.5.1.

9.14.1 Connector pinout



**Warning**

All interface signals (incl. GND) are NOT galvanically isolated from the housing ground and the supply voltages in the device.  
Please pay attention to the safety information.

DSUB male connector, 9 pins View onto the pins of the connector	Pin	Signal	Type
	1	DCD (Data Carrier Detect)	In
	2	RxD (Receive Data)	In
	3	TxD (Transmit Data)	Out
	4	DTR (Data Terminal Ready)	Out
	5	GND (Ground)	–
	6	DSR (Dataset Ready)	In
	7	RTS (Request To Send)	Out
	8	CTS (Clear To Send)	In
	9	RI (Ring Indicator)	In



## 9.14.2 Power supply for RS232 devices

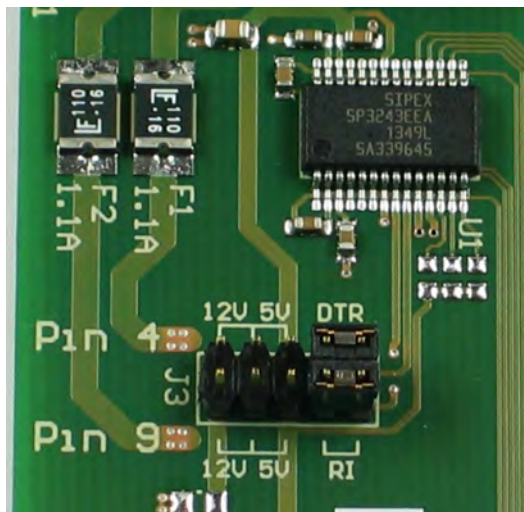


Fig. 47: Jumper on the interface module

The RS232 interface module provides the option of supplying power to external devices via the connector pins:

- Pin 9 (RI) and/or Pin 4 (DTR)
- 5 V +/-5% or 12 V +/-5% output voltage

The setting is adjusted via the Jumper J3

Default factory setting:

(if no other labeling)

- Pin 4 = DTR
- Pin 9 = RI



Fig. 48: RS232 interface module bottom side with setting label (visible side)



Interfaces that have been pre-adjusted at the factory are labeled accordingly in the connector area and on the module directly using stickers.

## 10 Operation

### 10.1 Touchscreen technologies



Refer also to chapter 7.1, which contains safety notes relating to the touchscreen.

#### 10.1.1 Resistive touchscreen

A certain amount of force has to be applied when touching the touch point of a resistive touchscreen if the action is to be recognized. There can only be one touch point.

The resistive touchscreen can be operated in a number of different ways, such as using your finger, even when wearing various types of gloves, or a stylus. Harsh environmental conditions, for example water and dust, do not have any effect.

#### 10.1.2 Projected capacitive touchscreen

Projected capacitive touchscreens can be operated with just a light touch of the glass surface. There is no need to apply any force. Several touch points can be recognized (= multitouch).

The projected capacitive touchscreen can be operated using the fingertips (even when wearing gloves) or using a compatible stylus.

The glass surface is extremely resistant to harsh environmental conditions and is easy to clean.


To avoid malfunction, pay attention to the information in chapter 13.1.1 about cleaning the PCAP touchscreen.

## 10.2 Operation and display elements for device types C12, C15, C19, C21W


All operation and display elements are located on the front of the housing. The control panel consists of three function keys (F1 to F3), three control keys, four indicator lights (LEDs) and an ambient light sensor (ALS) at the bottom of the front.

① The following overview describes the functions as per the factory default settings.

### 10.2.1 General key information

- The  (Input) LED lights up / flashes when a key is pressed.
- The keys should be pressed as close to the center of their respective symbol as possible.

① Operation and display element functions can be changed, limited, or deactivated using the nSMART™ software.

 Information on the operation and functionality of the nSMART™ software can be found in Chapter 11.

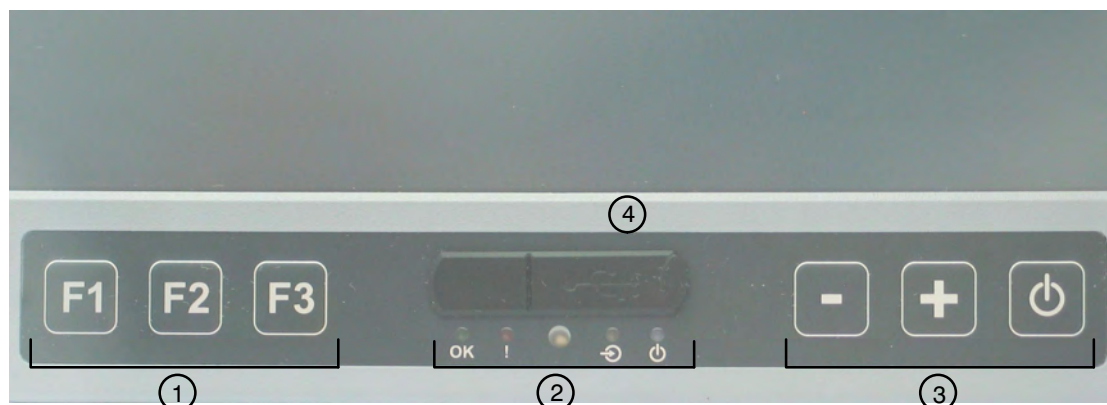




Fig. 49: Operation and display elements C12, C15, C19, C21W

- ① Function keys F1 to F3
- ② LED area for **OK**, **!** (Error),  (Input), and  (Power), with the ambient light sensor (ALS) in the center
- ③ Key area for device control (Minus, Plus, and On/Off)
- ④ Front USB port

### 10.2.2 Ambient light sensor (ALS)

An ambient light sensor is located in the center of the LED area. Its purpose is to automatically adjust the brightness of the display backlight to the available ambient light it measures.

① **When the device is delivered, the display backlight automatic adjustment is deactivated as standard.**

The function can be activated or deactivated using the nSMART™ software.

### 10.2.3 LED area

LED	Function
OK (green)	<b>OK LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is operational. All of the parameters monitored by the MCU are within the limits. (see section 11.1.)</li> <li>Flashes in standby mode.</li> </ul>
! (red)	<b>Error LED</b> <ul style="list-style-type: none"> <li>Lights up when an error or a critical event occurs with the Industrial PC hardware.</li> <li>Flashes when the IPC is in temperature limiting mode.</li> </ul>
⊖ (yellow/red)	<b>Input LED / HDD LED</b> <ul style="list-style-type: none"> <li>Lights up yellow when a valid input is made (has priority).</li> <li>Lights up red when there is hard disk activity.</li> </ul>
⦿ (blue)	<b>Power LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is turned on.</li> </ul>



When the **Error LED** starts to light up continuously, the other LEDs will no longer have their normal function and will instead display an error code. Possible LED states are “off”, “slow flashing”, “fast flashing”, and “on” (see Chapter 14).

### 10.2.4 Key area

Key	Function
– (Minus)	<ul style="list-style-type: none"> <li>Reduces display brightness.</li> </ul>
+ (Plus)	<ul style="list-style-type: none"> <li>Increases display brightness.</li> </ul>
⦿ (On/Off)	<ul style="list-style-type: none"> <li>Switches the Industrial PC on/off and wakes it up from standby.</li> <li>Switches the display backlight on/off.</li> <li>Initiates a hard reset or software shutdown.</li> </ul>

### 10.2.5 Function keys F1 to F3

The function keys F1 to F3 are freely configurable by the user. The nSMART™ software can be used to assign the keys.



**The keys are not assigned in the factory default settings.**



See Chapter 11.5 for a detailed explanation of how to assign the function keys.


## 10.3 Operation and display elements for device type C12P, C15P

All operation and display elements are located on the front of the housing. The control panel consists of six keys, four indicator lights (LEDs) and an ambient light sensor (ALS) at the bottom of the front.

The keys are operated with a light touch in the same way as the capacitive touch-screen. Their reaction to harsh environmental influences, such as humidity and moisture, is identical to that of the capacitive touchscreen.

① The following overview describes the functions as per the factory default settings.

### 10.3.1 General key information

- The  (Input) LED lights up / flashes when a key is pressed.
- The keys should be pressed as close to the center of their respective symbol as possible.

① Operation and display element functions can be changed, limited, or deactivated using the nSMART™ software.




 Information on the operation and functionality of nSMART™ can be found in Chapter 11.



Fig. 50: Operation and display elements of C12P, C15P

- ① Function keys F1 to F3
- ② LED area for **OK**, **!** (Error),  (Input), and  (Power), with the ambient light sensor (ALS) in the center
- ③ Key area for device control (Minus, Plus and On/Off)
- ④ Side USB port

### 10.3.2 Ambient light sensor (ALS)

An ambient light sensor is located in the center of the LED area. Its purpose is to automatically adjust the brightness of the display backlight to the available ambient light it measures.

 **When the device is delivered, the display backlight automatic adjustment is deactivated as standard.**

The function can be activated or deactivated using the nSMART™ software.

### 10.3.3 LED area

LED	Function
OK (green)	<b>OK LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is operational. All of the parameters monitored by the MCU are within the limits. (see section 11.1.)</li> <li>Flashes in standby mode.</li> </ul>
! (red)	<b>Error LED</b> <ul style="list-style-type: none"> <li>Lights up when an error or a critical event occurs with the Industrial PC hardware.</li> <li>Flashes when the IPC is experiencing a drop in temperature. (See Chapter 14.1.)</li> </ul>
⦿ (yellow/red)	<b>Input/HDD LED</b> <ul style="list-style-type: none"> <li>Lights up yellow when a valid input is made (has priority).</li> <li>Lights up red when there is hard disk activity.</li> </ul>
⦿ (blue)	<b>Power LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is turned on.</li> </ul>



When the **Error LED** starts to light up continuously, the other LEDs will no longer have their normal function and will instead display an error code. Possible LED states are “off”, “slow flashing”, “fast flashing”, and “on” (see Chapter 14).

### 10.3.4 Key area

Key	Function
– (Minus)	<ul style="list-style-type: none"> <li>Reduces display brightness.</li> </ul>
+ (Plus)	<ul style="list-style-type: none"> <li>Increases display brightness.</li> </ul>
⦿ (On/Off)	<ul style="list-style-type: none"> <li>Switches the Industrial PC on / off and wakes it up from standby.</li> <li>Switches the display backlight on / off.</li> <li>Initiates a hard reset or software shutdown.</li> </ul>

### 10.3.5 Function keys F1 to F3

The function keys F1 to F3 are freely configurable by the user. The nSMART™ software can be used to assign the keys.

 **The keys are not assigned in the factory default settings.**



See Chapter 11.5 for a detailed explanation of how to assign the function keys.

## 10.4 Operation and display elements for device type S12

All operation and display elements are located in the control panel on the front at the right-hand edge of the housing. The control panel consists of touchscreen keys and indicator lights (LEDs).

### 10.4.1 General key information

- The INPUT LED lights up / flashes when a key is pressed.
- The keys should be pressed as close to the center of their respective symbol as possible.

❗ Operation and display element functions can be changed, limited, or deactivated using the nSMART™ software.

📖 Information on the operation and functionality of the nSMART™ software can be found in Chapter 11.

### 10.4.2 Control panel

The following overview describes the functions as per the factory default settings.

LED	Function
<b>POWER</b> (green)	<ul style="list-style-type: none"> <li>• Lights up when the Industrial PC is turned on.</li> <li>• Flashes in standby mode.</li> </ul>
<b>INPUT</b> (yellow)	<ul style="list-style-type: none"> <li>• Lights up when a valid input is made.</li> </ul>
<b>HDU</b> (red)	<ul style="list-style-type: none"> <li>• Indicates hard drive activity.</li> </ul>
<b>OK</b> (green)	<ul style="list-style-type: none"> <li>• Lights up when the Industrial PC is operational. All of the parameters monitored by the MCU are within the limits. (see section 11.1.)</li> </ul>
<b>ERROR</b> (red)	<ul style="list-style-type: none"> <li>• Lights up when an error or a critical event occurs with the Industrial PC hardware.</li> </ul>
Key	Function
<b>Brightness +</b>	<ul style="list-style-type: none"> <li>• Increases display brightness.</li> </ul>
<b>Brightness –</b>	<ul style="list-style-type: none"> <li>• Reduces display brightness.</li> </ul>
<b>Contrast +</b>	Not used.
<b>Contrast –</b>	Not used.
<b>ON-OFF I</b>	<ul style="list-style-type: none"> <li>• Switches the Industrial PC on.</li> <li>• Switches the display backlight on.</li> <li>• Wakes up IPC from standby.</li> <li>• Resets the mainboard.</li> </ul>
<b>ON-OFF O</b>	<ul style="list-style-type: none"> <li>• Switches the Industrial PC off.</li> <li>• Switches the display backlight off.</li> <li>• Shutdown the software.</li> </ul>

Fig. 51: Operation and display elements S12




## 10.5 Operation and display elements for device types S15-G2, S19


All operation and display elements are located on the front of the housing. The control panel consists of four keys, four indicator lights (LEDs), and an ambient light sensor (ALS) at the bottom of the front. The row of keys to the left (F1 to F10) and right (F11 to F20) of the display can be used as function keys.

① The following overview describes the functions as per the factory default settings.

### 10.5.1 General key information

- The  (Input) LED lights up / flashes when a key is pressed.
- The keys should be pressed as close to the center of their respective symbol as possible.

① Operation and display element functions can be changed, limited, or deactivated using the nSMART™ software.

 Information on the operation and functionality of the nSMART™ software can be found in Chapter 11.

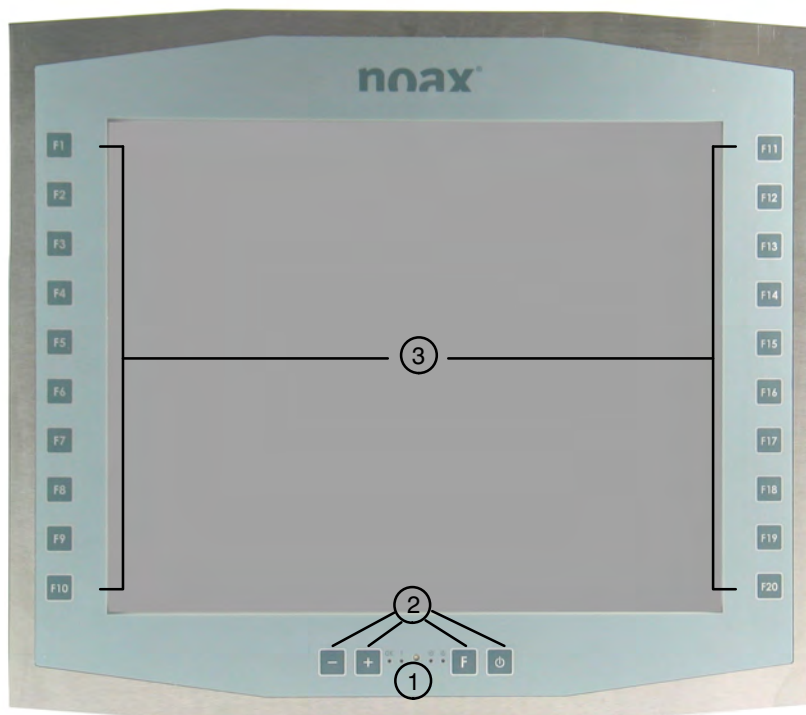




Fig. 52: Operation and display elements S15-G2 and S19

- ① LED area for **OK**, **!** (Error),  (Input), and  (Power), with the ambient light sensor (ALS) in the center
- ② Button area for device control (Minus, Plus, Function and On/Off)
- ③ Function keys to the left (F1 to F10) and right (F11 to F20)



## 10.5.2 Ambient light sensor (ALS)

An ambient light sensor is located in the center of the LED area. Its purpose is to automatically adjust the brightness of the display backlight to the available ambient light it measures.

**ⓘ When the device is delivered, the display backlight automatic adjustment is deactivated as standard.**

The function can be activated or deactivated using the nSMART™ software.

## 10.5.3 LED area

LED	Function
OK (green)	<b>OK LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is operational. All of the parameters monitored by the MCU are within the limits. (see section 11.1.)</li> <li>Flashes in standby mode.</li> </ul>
! (red)	<b>Error LED</b> <ul style="list-style-type: none"> <li>Lights up when an error or a critical event occurs with the Industrial PC hardware.</li> <li>Flashes when the IPC is in temperature limiting mode.</li> </ul>
⊖ (yellow)	<b>Input LED</b> <ul style="list-style-type: none"> <li>Lights up yellow when a valid input is made.</li> </ul>
⦿ (blue)	<b>Power LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is turned on.</li> </ul>



When the **Error LED** starts to light up continuously, the other LEDs will no longer have their normal function and will instead display an error code. Possible LED states are “off”, “slow flashing”, “fast flashing”, and “on” (see Chapter 14).

## 10.5.4 Key area

Key	Function
– (Minus)	<ul style="list-style-type: none"> <li>Reduces display brightness.</li> </ul>
+ (Plus)	<ul style="list-style-type: none"> <li>Increases display brightness.</li> </ul>
F (Function)	<ul style="list-style-type: none"> <li>Free configurable function key</li> </ul>
⦿ (On/Off)	<ul style="list-style-type: none"> <li>Switches the Industrial PC on / off and wakes it up from standby.</li> <li>Switches the display backlight on / off.</li> <li>Initiates a hard reset or software shutdown.</li> </ul>

## 10.5.5 Function keys F, F1 to F20

The function keys F and F1 to F20 are freely configurable by the user. The nSMART™ software can be used to assign the keys.

**ⓘ The keys are not assigned in the factory default settings.**



See Chapter 11.5 for a detailed explanation of how to assign the function keys.

## 10.6 Operation and display elements for device type S15P, S15R, S19P, S19R, S21WP, S21WR

All operation and display elements are located on the front of the housing. The control panel consists of six keys, four indicator lights (LEDs) and an ambient light sensor (ALS) at the bottom of the front.

### **Device type S15P, S19P and S21WP – Capacitive keys:**


The keys are operated with a light touch in the same way as the capacitive touch-screen. Their reaction to harsh environmental influences, such as humidity and moisture, is identical to that of the capacitive touchscreen.

### **Device type S15R, S19R and S21WR – Touchscreen keys:**

The keys have to be operated with a certain amount of force in the same way as the resistive touchscreen. Their reaction to harsh environmental influences, such as humidity and moisture, is noncritical just like the resistive touchscreen.

- ① The following overview describes the functions as per the factory default settings.

### 10.6.1 General key information

- The  (Input) LED lights up / flashes when a key is pressed.
- The keys should be pressed as close to the center of their respective symbol as possible.

- ① Operation and display element functions can be changed, limited, or deactivated using the nSMART™ software.

-  Information on the operation and functionality of nSMART™ can be found in Chapter 11.

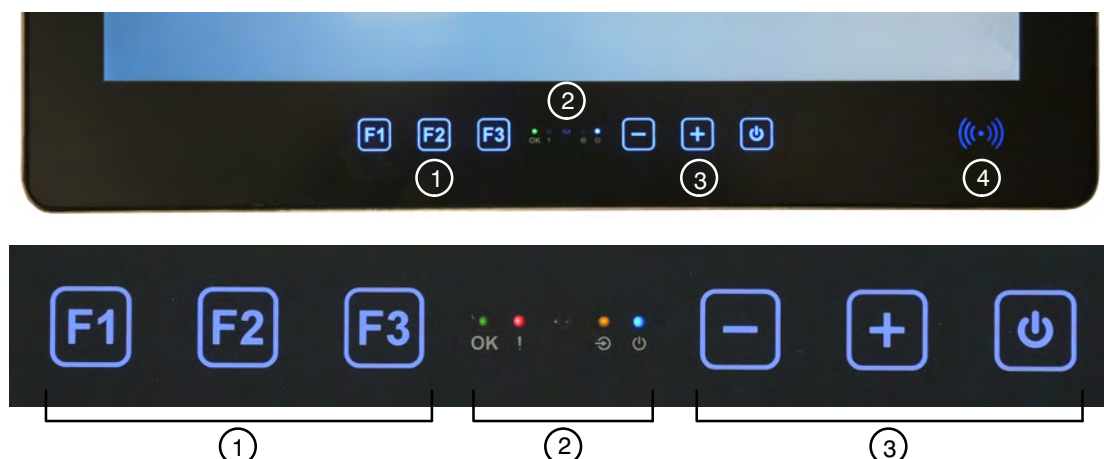





Fig. 53: Operation and display elements on example of a S21WP

- ① Function keys F1 to F3
- ② LED area for **OK**, **!** (Error),  (Input), and  (Power), with the ambient light sensor (ALS) in the center
- ③ Key area for device control (Minus, Plus and On/Off)
- ④ Reading area for the optional RFID Multireader.  
Backlit only when an RFID Multireader is installed.

## 10.6.2 Ambient light sensor (ALS)

An ambient light sensor is located in the center of the LED area. Its purpose is to automatically adjust the brightness of the display backlight to the available ambient light it measures.

 **When the device is delivered, the display backlight automatic adjustment is deactivated as standard.**

The function can be activated or deactivated using the nSMART™ software.

## 10.6.3 LED area

LED	Function
OK (green)	<b>OK LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is operational. All of the parameters monitored by the MCU are within the limits. (see section 11.1.)</li> <li>Flashes in standby mode.</li> </ul>
! (red)	<b>Error LED</b> <ul style="list-style-type: none"> <li>Lights up when an error or a critical event occurs with the Industrial PC hardware.</li> <li>Flashes when the IPC is experiencing a drop in temperature. (See Chapter 14.1.)</li> </ul>
⦿ (yellow/red)	<b>Input/HDD LED</b> <ul style="list-style-type: none"> <li>Lights up yellow when a valid input is made (has priority).</li> <li>Lights up red when there is hard disk activity.</li> </ul>
⦿ (blue)	<b>Power LED</b> <ul style="list-style-type: none"> <li>Lights up when the Industrial PC is turned on.</li> </ul>



When the **Error LED** starts to light up continuously, the other LEDs will no longer have their normal function and will instead display an error code. Possible LED states are “off”, “slow flashing”, “fast flashing”, and “on” (see Chapter 14).

## 10.6.4 Key area

Key	Function
– (Minus)	<ul style="list-style-type: none"> <li>Reduces display brightness.</li> </ul>
+ (Plus)	<ul style="list-style-type: none"> <li>Increases display brightness.</li> </ul>
⦿ (On/Off)	<ul style="list-style-type: none"> <li>Switches the Industrial PC on / off and wakes it up from standby.</li> <li>Switches the display backlight on / off.</li> <li>Initiates a hard reset or software shutdown.</li> </ul>

## 10.6.5 Function keys F1 to F3

The function keys F1 to F3 are freely configurable by the user. The nSMART™ software can be used to assign the keys.

 **The keys are not assigned in the factory default settings.**





See Chapter 11.5 for a detailed explanation of how to assign the function keys.

## 10.7 Factory default settings for operation elements


### 10.7.1 Device types C12, C15, C19, C21W, S15-G2, S19

Function	Default factory setting
Switching the Industrial PC on	<ul style="list-style-type: none"> <li>▶ Press the [On/Off] key for a <b>minimum of 1 second</b></li> <li>▶ Use the “Touch Power On” function (see Chapter 10.9)</li> </ul>
Switching the Industrial PC off	<ul style="list-style-type: none"> <li>▶ Press the [On/Off] key for a <b>minimum of 6 seconds</b> (until IPC turns off)</li> </ul>
Setting the display brightness	<ul style="list-style-type: none"> <li>▶ Change the brightness by one level: <b>Quickly</b> press the [+] or [–] key</li> <li>▶ Change the brightness continuously: <b>Press</b> the [+] or [–] key <b>and hold</b> it down</li> </ul>
Switching the display on / off	<ul style="list-style-type: none"> <li>▶ <b>Quickly</b> press the [On/Off] key</li> </ul>
Shutting the software down	<ul style="list-style-type: none"> <li>▶ Press the [On/Off] key and hold it down (an intermittent beep will be heard and the power LED will flash). Release after <b>3 seconds</b> (when a fast, intermittent beep can be heard and the power LED flashes faster) <b>This function is only available on operating systems with ACPI support.</b></li> </ul>
Resetting the mainboard	<ul style="list-style-type: none"> <li>▶ Press the [On/Off] <u>and</u> [–] keys together for <b>more than 3 seconds</b></li> </ul>
Starting with default setup (= default factory settings)	<ul style="list-style-type: none"> <li>▶ Press and hold both the [F] or [F1] <u>and</u> [+] keys together, <u>and then</u> connect the power supply. (OK LED flashes) The Industrial PC starts up with the default factory settings (default setup)</li> </ul>
Switching touch cleaning mode on/off (deactivating touchscreen)	<ul style="list-style-type: none"> <li>▶ Press the [F] or [F1] <u>and</u> [+] <u>and</u> [–] keys <b>together for more than 1 second</b> (INPUT LED flashes). For more information on this see Chapters 13 and 11.8.</li> </ul>

- ① [F] key for device types S15-G2 and S19  
[F1] key for device types C12, C15, C19, and C21W
- ① Legend for LEDs: Power LED  (blue), OK LED (green), Input LED  (yellow)
- ① When starting with default setup (OK LED flashes), the settings chosen by the user are not lost. The nSMART™ software can be used to change and save the settings. If the Industrial PC is then restarted (without the key combination), the settings defined and saved by the user will be reloaded.

## 10.7.2 Device type S12

Function	Default factory setting
Switching the Industrial PC on	<ul style="list-style-type: none"> <li>▶ Press the [ON-OFF I] key for a <b>minimum of 1 second</b></li> <li>▶ Use the “Touch Power On” function (see Chapter 10.9)</li> </ul>
Switching the Industrial PC off	<ul style="list-style-type: none"> <li>▶ Press the [ON-OFF O] key for a <b>minimum of 6 seconds</b> (until IPC turns off)</li> </ul>
Setting the display brightness	<ul style="list-style-type: none"> <li>▶ Change the brightness by one level: <b>Quickly</b> press the [Brightness +] or [Brightness –] key</li> <li>▶ Change the brightness continuously: <b>Press and hold</b> the [Brightness +] or [Brightness –] key</li> </ul>
Switching the display on	<ul style="list-style-type: none"> <li>▶ <b>Quickly</b> press the [ON-OFF I] key</li> </ul>
Switching the display off	<ul style="list-style-type: none"> <li>▶ <b>Quickly</b> press the [ON-OFF O] key</li> </ul>
Shutting the software down	<ul style="list-style-type: none"> <li>▶ Press the [ON-OFF O] key and hold it down (an intermittent beep will be heard and the power LED will flash). Release after <b>3 seconds</b> (when a fast, intermittent beep can be heard and the power LED flashes faster) <b>This function is only available on operating systems with ACPI support.</b></li> </ul>
Resetting the mainboard	<ul style="list-style-type: none"> <li>▶ Press the [ON-OFF I] key for <b>more than 3 seconds</b></li> </ul>

① Legend for LED: Power LED  (green)

## 10.7.3 Device types S15, P15

Function	Default factory setting
Switching the Industrial PC on	<ul style="list-style-type: none"> <li>▶ Use the “Touch Power On” function (see Chapter 10.9)</li> </ul>

## 10.7.4 Device type C12P, C15P, S15P, S19P, S21WP

Function	Default factory setting
Switching the Industrial PC on	► Press the [On/Off] key for a <b>minimum of 1 second</b>
Switching the Industrial PC off	► Press the [On/Off] key for a <b>minimum of 6 seconds</b> (until IPC turns off)
Setting the display brightness	► Change the brightness by one level: <b>Quickly</b> press the [+] or [-] key ► Change the brightness continuously: <b>Press</b> the [+] or [-] key <b>and hold</b> it down
Switching the display on/off	► <b>Quickly</b> press the [On/Off] key
Shutting the software down	► Press the [On/Off] key and hold it down (an intermittent beep will be heard and the power LED will flash). Release after <b>3 seconds</b> (when a fast, intermittent beep can be heard and the power LED flashes faster) <b>This function is only available on operating systems with ACPI support.</b>
Resetting the mainboard	► Press the [On/Off] <u>and</u> [-] keys <b>together for more than 3 seconds</b>
Switching touch cleaning mode on/off (deactivating touchscreen)	► Press the [F1] <u>and</u> [+] <u>and</u> [-] keys <b>together for more than 1 second</b> (INPUT LED flashes). For more information on this, see Chapters 13 and 11.8.

① Legend for LEDs: Power LED  (blue), OK LED (green), Input LED  (yellow)

## 10.7.5 Device type S15R, S19R, S21WR

Function	Default factory setting
Switching the Industrial PC on	► Press the [On/Off] key for a <b>minimum of 1 second</b>
Switching the Industrial PC off	► Press the [On/Off] key for a <b>minimum of 6 seconds</b> (until IPC turns off)
Setting the display brightness	► Change the brightness by one level: <b>Quickly</b> press the [+] or [-] key ► Change the brightness continuously: <b>Press</b> the [+] or [-] key <b>and hold</b> it down
Switching the display on/off	► <b>Quickly</b> press the [On/Off] key
Shutting the software down	► Press the [On/Off] key and hold it down (an intermittent beep will be heard and the power LED will flash). Release after <b>3 seconds</b> (when a fast, intermittent beep can be heard and the power LED flashes faster) <b>This function is only available on operating systems with ACPI support.</b>
Resetting the mainboard	► <b>Press</b> the [On/Off] key <b>and hold</b> it down, <b>then press</b> the [-] key <b>and hold</b> down the keys <b>together for more than 3 seconds</b>
Switching touch cleaning mode on/off (deactivating touchscreen)	► <b>Press</b> the [F1] key <b>and hold</b> it down, <b>then press</b> the [+] key <b>and hold</b> down the keys <b>together for longer than 1 second</b> (INPUT LED flashes). For more information on this, see Chapters 13 and 11.8.

① Legend for LEDs: Power LED  (blue), OK LED (green), Input LED  (yellow)

## 10.8 Automatically reducing the screen brightness



This function is **not** available on devices with a PCAP touchscreen.

In the default factory settings, the display brightness is dimmed to a preset lower brightness level 3 minutes after a key or the touchscreen is last pressed.

Function	Default factory setting
Reducing the display brightness	► 3 minutes after a key or the touchscreen is last pressed
Reactivating	► Press the [On/Off] key or the [ON-OFF I] key ► Press the touchscreen

## 10.9 “Touch Power On” function



This function is **not** available on devices with a PCAP touchscreen.

The “Touch Power On” function allows users to switch on the Industrial PC by pressing two specific points on the touchscreen surface.

Two definable touch points must be pressed and held in the right sequence and within a certain time.

This function was developed especially for devices which do not have a control panel.



See Chapter 11.6 on calibrating the touch points for “Touch Power On”.

## 10.10 Calibrating the touchscreen



Calibration is **not necessary** on devices with a PCAP touchscreen.

The calibration of the touchscreen only needs to be done if the touch point on the touchscreen and the trigger point on the displayed user interface differ too much.

The calibration tool can be accessed directly from the nSMART™ software.



See Chapter 11.7 on calibrating the touchscreen.

The PCAP touchscreen is calibrated automatically in line with the ambient conditions and so does not need to be calibrated manually.



## 11 Software nSMART™

### 11.1 noax Microcontroller (MCU)

All noax Industrial PCs contain a microcontroller (MCU = microcontroller unit) on the motherboard along with the CPU. This MCU monitors important system functions and also carries out additional control functions.

The MCU constantly monitors:

- All supply voltages (Input voltage, 12 V, 5 V, Core voltages, ...)
- System temperatures
- Fan functions



#### **Warning**

If a monitored parameter exceeds the specified value limits, an error message is displayed via the control panel LEDs.

In the event of serious errors, the system will be switched off immediately.

These safety functions avoid damage being caused to the Industrial PC (e.g., as a result of an excessive internal temperature).

### 11.2 Launching the software nSMART™

On Windows operating systems that were installed previously by noax, you will find the nSMART™ software using the following path:

**C:\install\software\nSMART**

Run the nSMART.exe file to launch the software.

No installation is required and the software can be launched right away. A shortcut can be added to the desktop to make it even easier to access the program.

nSMART™ has different access rights:

- A standard user can only view settings and values.  
It is not possible to change any settings.
- A user with administrator rights can view settings and values, and has also the option of changing settings.



**The latest version of the nSMART™ software is available to download from our website [www.noax.com](http://www.noax.com) under “Software & Drivers” in the “Download Center”.**

## 11.3 Settings with software nSMART™

The various functions controlled by the MCU can be set using the nSMART™ software that has been specially designed for noax Industrial PCs.



Fig. 54: Software GUI nSMART™

The MCU parameters are clearly laid out and can be easily set thanks to the software graphical user interface.

- Startup and shutdown functions
- Touchscreen settings, such as the “Touch Power On” function
- Functions for the LEDs and keys on the control panel
- Display brightness
- Configurable function keys

Using the `Direct Help` button in the top left corner of the program window, help can be displayed for any of the setting points.

## 11.4 Device information

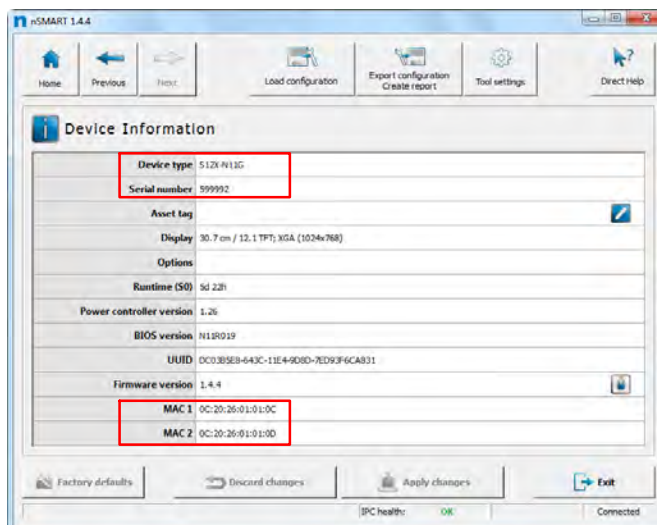


Fig. 55: Device information

Important Industrial PC device information, such as the serial number or the MAC addresses, is displayed on the nSMART™ device information page.

## 11.5 Assigning / configuring the function keys

If a device has function keys, they can be freely assigned using the nSMART™ software. There is the option to save a keystroke, a key combination, or a key macro.

A key macro can be created by adding a number of consecutive keystrokes, key combinations, or time delays/pauses.

**Function keys can be assigned as follows:**

1. Launch the nSMART™ software and click on the “Control Keys” button.
2. Select the function key to be configured. In the example here, we select the F key.

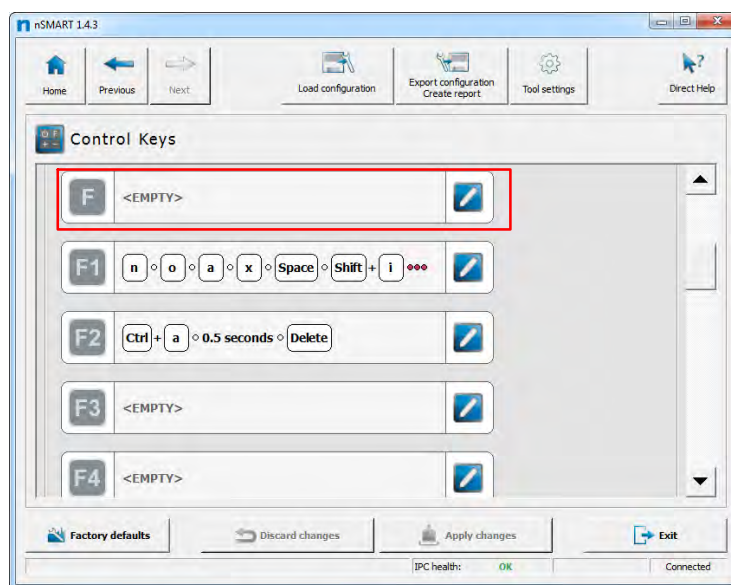


Fig. 56: Function keys

3. To edit the function key, either click on the pencil icon or double-click on the corresponding row.
4. The key editor will open.  
The default setting in the key configuration pull-down menu is “Keystroke”.



Fig. 57: Entering the required key

5. Press the desired key or key combination on a connected standard keyboard or a virtual touchscreen keyboard. In the example here, “Ctrl + Alt + r” is selected.
6. Press the “Add” button to transfer the key / key combination over to the element list.
7. Repeat Steps 5. and 6. to add further keys / key combinations as required.

- ① By adding time delays / pauses to key macros, it is possible to wait for the Industrial PC or software to respond before proceeding with the next key or key combination.  
Pauses can be set via the pull-down menu item “Time delay”.

8. Press “OK” to add the function key assignment. The key editor closes.

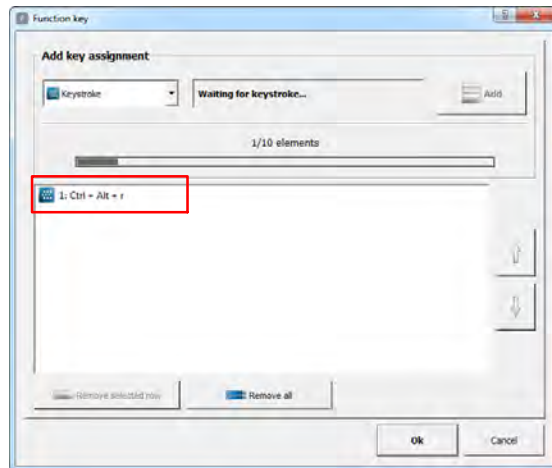


Fig. 58: Adding the key assignment

9. By clicking on “Apply changes”, the function key assignment will be permanently saved.

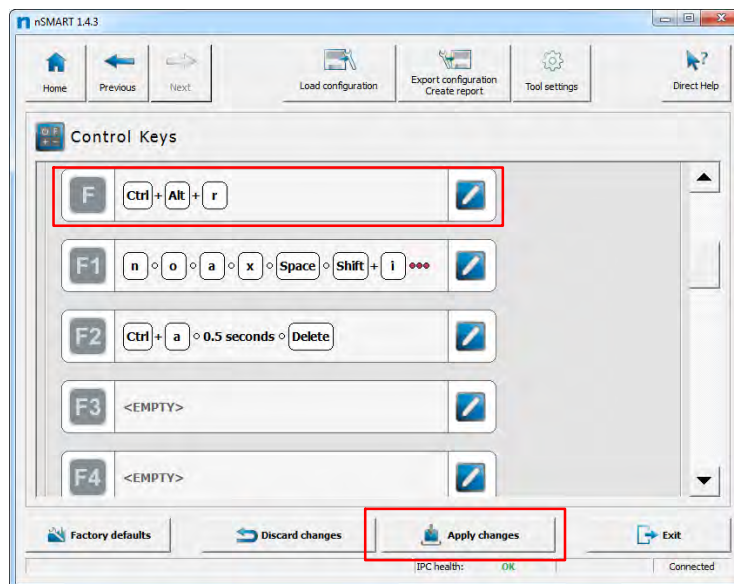
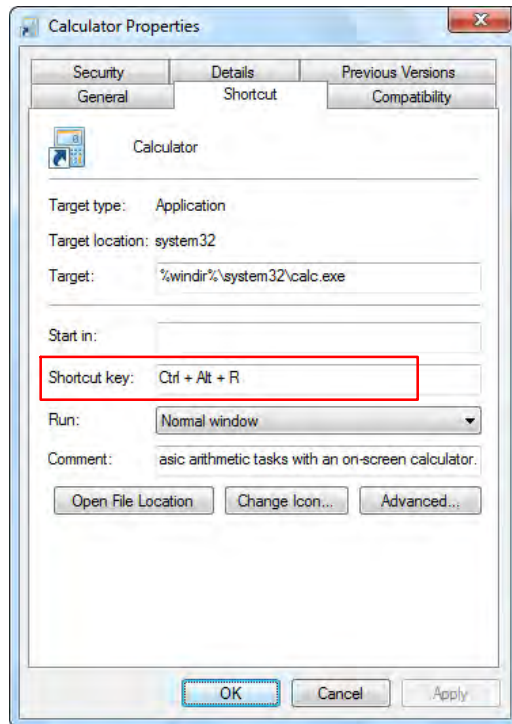


Fig. 59: Saving the assignment

### 11.5.1 Program start via function key

Function keys can be used for starting a program if you assign a key combination to a function key and create a program shortcut on your desktop.

To do this, first assign a key combination to the desired function key (see Chapter 11.5). Then, save the key combination set for the desired function key in the program shortcut on your desktop.



You can do this by right-clicking on the program shortcut and selecting “Properties” from the shortcut menu.

Click in the “Shortcut key” row on the “Shortcut” tab and press the desired function key or enter the key combination on your keyboard.

Click on “Save” or “OK” to save your changes.

In the example shown on the left, you can see that the key combination “Ctrl + Alt + r” has been set for the Windows calculator. In this case, the Windows calculator will now open up when the desired function key is pressed.

Fig. 60: Example of a key combination in the “Properties” window of a program shortcut

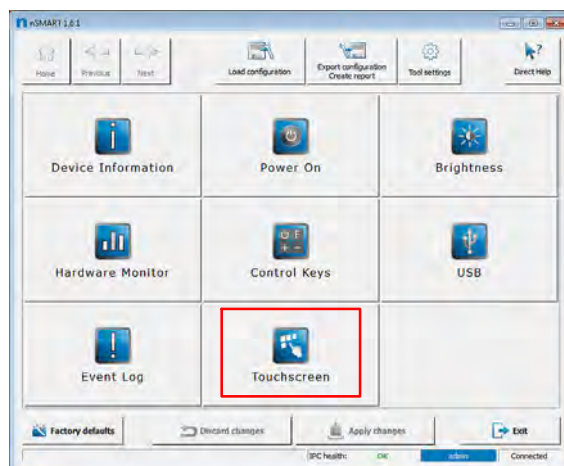
## 11.6 Calibrating touch points for “Touch Power On”



See Chapter 10.9 for an explanation of the function



**This function is not available on devices with a PCAP touchscreen.**



1. To calibrate touch points, go to the nSMART™ software overview and click on the touchscreen icon.

Fig. 61: nSMART overview



2. Press the Computer On/Off Touch points calibration button to open the calibration dialog.

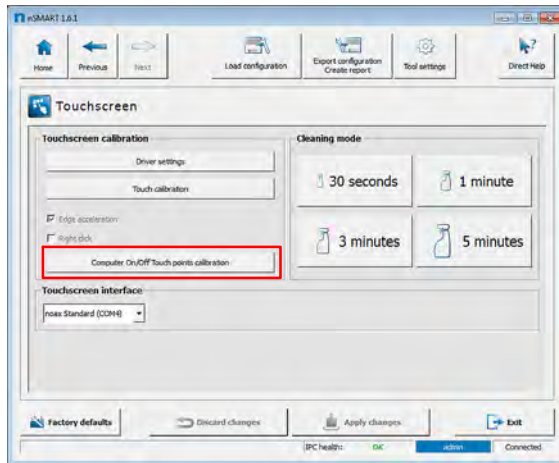


Fig. 62: Touchscreen window

3. Press and hold down the top left corner.
4. Press and hold down the bottom right corner.



Fig. 63: Pressing the top left corner

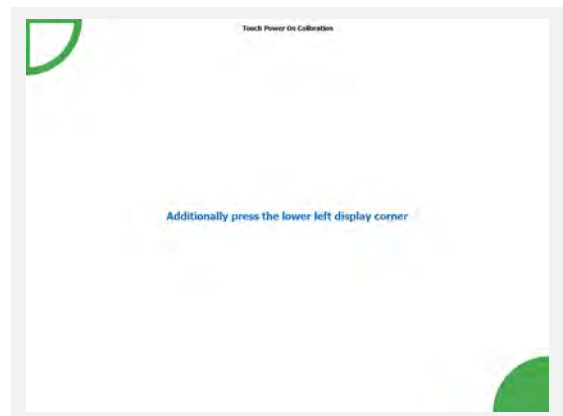


Fig. 64: Pressing the bottom right corner

5. Calibration is complete. The dialog closes automatically.



Fig. 65: Calibration complete

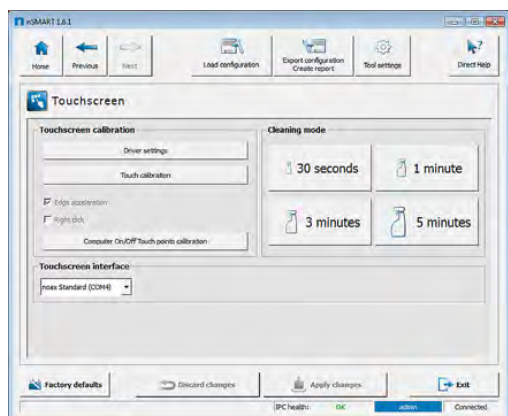


Fig. 66: Applying changes

6. The touch point calibration will be saved automatically.
7. Click on Exit and close nSMART™.

## 11.7 Function “Touch calibration”



**This function is not required for devices with a PCAP touchscreen.**

The PCAP touchscreen will be calibrated automatically at regular intervals.

This function allows the user to calibrate the accuracy of the touchscreen. This is only necessary if the touch point on the touchscreen and the trigger point on the display differ too much.

If you have chosen “USB HID Touch” or “USB HID Mouse” as the output protocol for the touch data, the touchscreen calibration will be performed via the noax MCU.

If you have chosen “noax Standard (COM4)” or “Thin-Client (COM4)” as the output protocol, the touchscreen calibration will be performed via the touch driver tool.

The calibration tool can be started directly from the nSMART™ software in each case.

### 11.7.1 Calibrating the touchscreen

1. To calibrate the touchscreen, launch the nSMART™ software on the device and click on the touchscreen icon in the overview.

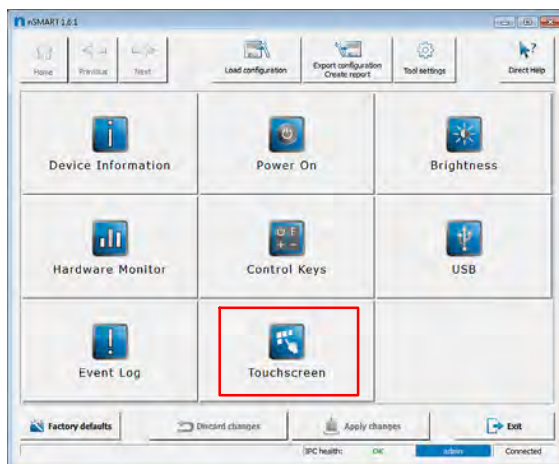


Fig. 67: nSMART overview

2. Click on the Touch calibration button to open the calibration dialog.

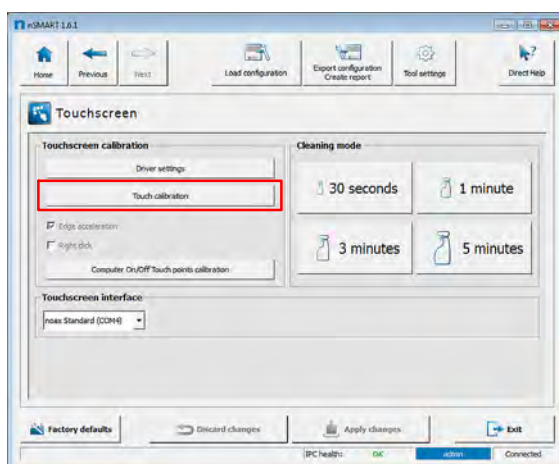


Fig. 68: Touchscreen window

3. One after the other 9 calibration points will be displayed, starting from the top left. Press each of the points in the center in the order in which they are displayed. This is best achieved with the aid of a touch pen.

#### **Calibration screen from the noax MCU**



Fig. 69: First touch calibration point



Fig. 70: Last touch calibration point

#### **Calibration screen from the touch driver**



Fig. 71: First touch calibration point



Fig. 72: Last touch calibration point

4. The calibration data for the touchscreen will be applied and saved automatically.
5. Click on **Exit** and close nSMART™.

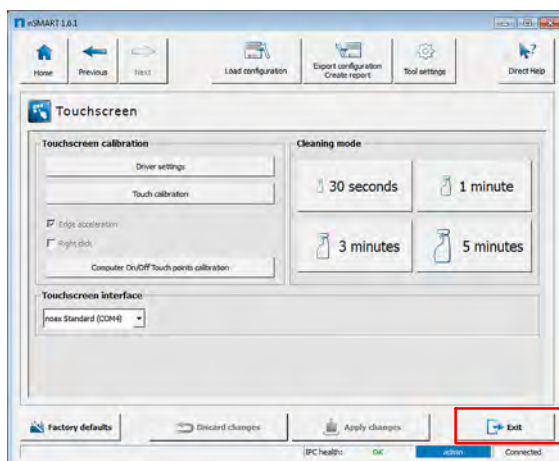


Fig. 73: Touchscreen window



## 11.8 Launching touchscreen cleaning mode



It is important to refer to Chapter 13 on cleaning the Industrial PC at this point.

1. To launch touchscreen cleaning mode, open the nSMART™ software overview. Select the Touchscreen button.

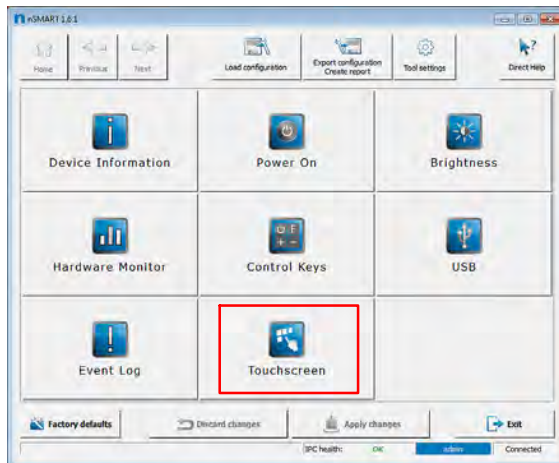


Fig. 74: nSMART overview

2. Press the button for the desired cleaning time (30 s, 1 min, 3 min, or 5 min). The cleaning mode will then start automatically and the touchscreen of the Industrial PC will be locked for the time during which cleaning is taking place.

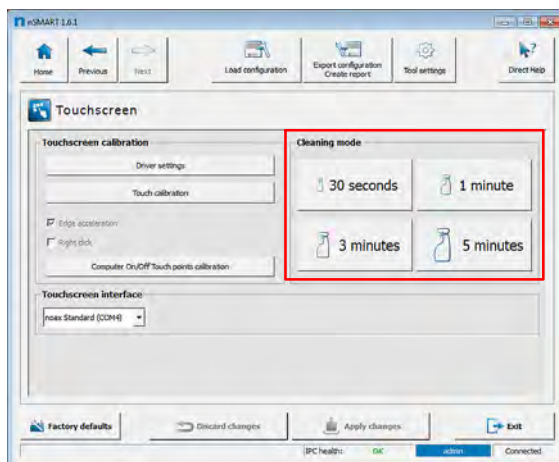



Fig. 75: nSMART: touchscreen overview: Setting the cleaning time

3. The touchscreen can now be cleaned.  
The  Input LED flashes when cleaning mode is activated.
4. Cleaning mode ends automatically once the set time has passed.  
The software switches back to the touchscreen overview.
5. Exit the touchscreen overview by clicking on the Exit button.

## 12 Upgrades and maintenance work

The Industrial PC should only be opened by **authorized specialist personnel**. The same applies to upgrades and maintenance work.

The warranty is voided by improper upgrades and maintenance work. When in doubt, let the noax service team perform this work.



**Please find contact information on the back cover of this user manual.**

### 12.1 Opening and closing the Industrial PC



#### **Warning**

These devices contain electronic components with highly integrated modules or modular elements. Due to the technology employed, these electronic components are extremely sensitive to surges as well as to discharges of static electricity. When working on the electronic components, follow the generally applicable ESD guidelines.



#### **Warning**

Before opening the device for upgrades or maintenance work, the Industrial PC must be completely disconnected from the supply voltage!  
It is not enough to just shut down the operating system.

- ① noax recommends removing the IPC from its bracket and placing it on a suitable clean surface when performing upgrades or maintenance work.  
Make sure you check the surface before placing the IPC down on it so as to avoid the front being scratched.

#### 12.1.1 Steps to open the Industrial PC

- ▶ Disconnect all cables before opening the Industrial PC, especially the mains supply voltage cable or the cable from the “Power 24 V” connector.
- ▶ To open the IPC enclosure, use a suitable tool (see Chapter 8.3) to remove the screws in the rear of the enclosure. When removing the screws, pay attention to the different screw lengths if applicable.
- ▶ Now remove the rear cover and do the maintenance work.



#### **Warning**

After opening the enclosure, please note that some parts and components can become very hot during operation (e.g., memory).  
Allow these components to cool down before touching them!

## 12.1.2 Steps to close the Industrial PC

- Before and while closing the device, for example after upgrades or servicing, check that all seals are positioned correctly!
- **With S15P, S15R, S19P, S19R, S21WP, S21WR with enclosure variant Hygienic:** Check the correct position of the rubber seal and the special screw seal! Apply the rubber seal first on the corners of the rear cover and then continue to the middle of the edges.



Fig. 76: Correct position of seal



Fig. 77: Wrong position of seal

- Put the rear cover back on the IPC front and fix in place using the screws removed from the enclosure previously. Observe the tightening torques applicable to the various screws. (See Chapter 8.2.)



### Warning

For devices with internal power supply, after working near the internal power supply, a routine safety test according DIN VDE 0701-0702 have to be done!

## 12.2 Handling components



### Warning

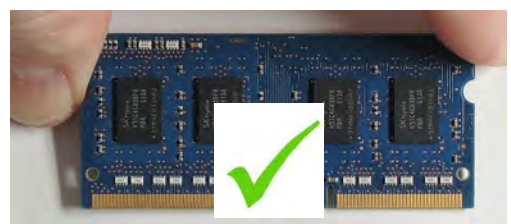
The Industrial PC contains electronic components with highly integrated modules or modular elements. Due to the technology employed, these electronic components are extremely sensitive to surges as well as to discharges of static electricity. When working on and with electronic parts and components, follow the generally applicable ESD guidelines.

As a general rule, noax recommends first touching a metal part, such as the system carrier plate or connector plate, followed by the electronic part or component.



### Warning

Do not touch the golden contacts of the parts and components.



## 12.3 Replacing the CMOS battery



### Danger

Only use Panasonic BR2032 CMOS batteries or those of equivalent types approved by noax. Under no circumstances should the CMOS battery be short-circuited or opened.

- It is necessary to open the IPC in order to replace the CMOS battery. If there is a card in the Slot 1 expansion slot, this will also need to be removed.
- It will then be possible to remove the CMOS battery from the socket and replace it with a new one.

**Install the new battery**  
(manufacturer Panasonic, type BR2032) with the “+” sign up (the “+” sign must be visible after installation).



Fig. 78: CMOS battery

- Finally, if you removed a card previously, insert it again now and close the IPC housing back up. (See Chapter 12.1.)

When storing used CMOS batteries, make sure that they are electrically isolated.



Refer to the technical data in Chapter 15.3.4 and follow the instructions in Chapter 16 on Disposal.

## 13 Cleaning the Industrial PC

### 13.1 General cleaning information

1. Use a commercially available plastic cleaner and soft, lint-free cleaning cloths.
2. Do not apply the cleaning agent directly to the Industrial PC. Apply to a cleaning cloth first.
3. Only clean with a moist cloth (not wet, with the exception of IP65 (NEMA 4) devices) and do not push cleaning agent underneath the touchscreen seals.
4. Clean the surface and display window gently.
5. Completely remove any cleaning agent from the device using a clean cloth.

When cleaning make sure that residues from all cleaning agents or cleaning tools will be completely removed, e.g. by rinsing with clear water.

After cleaning the enclosure front no residues may be present, especially on the touchscreen and the operational elements.



#### Warning

Do not clean the front of the unit (touchscreen, control keys) with products containing abrasive substances. This will scratch and dull the surface.



#### Warning

Do not use cleaning agents containing concentrated mineral acids, concentrated alkaline lyes, benzyl alcohol or methylene chloride for cleaning the front of the unit!



#### Warning

Cleaning with high-pressure (hot steam) cleaner is only allowed for Industrial PCs with IP protection class IP69K. Pay attention to the following limits:

- ① Do not exceed the following limits for noax Industrial PCs with **IP protection class IP69k**:  
**max. 176°F (80°C), max. 100 bar, max. 16 l/min,**  
**minimum 3.9 inches (10 cm) nozzle distance, no needle jet nozzle**  
**(flat spray nozzle recommended)**

#### Note:

The IP protection class is determined by the system as a whole, i.e., the housing type and a corresponding connector protection.

### 13.1.1 Devices with PCAP touchscreen

The glass surface of the PCAP touchscreen can be cleaned with a commercially available glass cleaning agent. Wipe the glass dry after cleaning.

For correct function the glass surface of the PCAP touchscreen has to be free from any residues. (see general cleaning information on section 13.1.)

If necessary redo the cleaning of the PCAP touchscreen and finally switch off the display with the [ On / Off ] key, wait a second and switch on the display with the [ On / Off ] key again.

## 13.2 Touchscreen cleaning mode

When touchscreen cleaning mode is activated, the Industrial PC touchscreen and control keys are deactivated for a set period of time. This allows the user to take the time to clean the device even during operation, without the risk of accidentally triggering actions. This cuts out the time-consuming process of shutting down and restarting the Industrial PC.


The touchscreen cleaning mode of the Industrial PC can be launched either via the nSMART™ software or for some Industrial PC types with a key combination using the control keys.

### 13.2.1 Starting cleaning mode with nSMART™

Touchscreen cleaning mode can be started through the nSMART™ software in the “Touchscreen” section.



For further information on this, see Chapter 11.8

The yellow  (Input) LED will flash as confirmation that cleaning mode has been activated.

The touchscreen surface can now be cleaned. When it is touched, no data will be sent to the operating system.


### 13.2.2 Starting cleaning mode with a key combination



**Not possible with device types S15 and P15**



See Chapter 10.7 for information about starting the touchscreen cleaning mode with key combination. Here, touchscreen cleaning mode will be started without time limit.

The yellow  (Input) LED will flash as confirmation that cleaning mode has been activated.

The touchscreen surface can now be cleaned. When it is touched, no data will be sent to the operating system.

## 14 Troubleshooting

This section provides information on the action needed when the device malfunctions.



If any of the following internal faults are present, the devices will not switch on or will switch off automatically:

- Input voltage too high / too low
- Internal voltages too high / too low
- System internal temperature too high / too low

### 14.1 Behavior at temperature limits

If the system temperature rises too much during operation, the MCU will first reduce the generation of heat in the device. One of the ways this is achieved is by lowering the display brightness. This mode can be recognized by the flashing ! (Error) LED.

In this case, check that there is sufficient air circulation at the device rear panel and make sure that the device is not covered by objects.

If the system temperature drops back down, the device will automatically revert to normal operation. However, if the system temperature continues to rise, the display will additionally switched off. This state can be recognized by the quickly flashing ! (error) LED.

If the system temperature continues to rise further, the IPC will be switched off. It will then not be possible to switch the IPC back on until it has cooled down sufficiently.

If the system temperature is generally too high, the device will not switch on. Likewise, if the system temperature is generally too low, the device will not switch on then either.

The device will also switch off automatically as soon as the system temperature drops below the permissible value.

Excessively high or low system temperatures will be indicated by an error code.





For areas with high or low ambient temperatures, an extended temperature range is offered as an option for some Industrial PCs. Please contact the noax hotline to find out more about this.

### 14.2 Frequently asked questions (FAQs)

Our FAQ list can be found on our website **[www.noax.com](http://www.noax.com)** under **Service and Support**. This is the first place to check when you have a question.

## 14.3 Error codes – LED displays for errors

When an error occurs, the integrated MCU displays an error code via the control panel LEDs which provides more information about the error type.

When the ! (Error) LED starts to light up continuously, the **OK** (OK),  (Input), and  (Power) LEDs will no longer have their normal function and will instead display an error code.

Possible LED states are “off”, “slow flashing” (1.5x/s), “fast flashing” (10x/s), and “on”.

Description	Error LED (red)	OK LED (green)	Input LED (yellow)	Power LED (blue)
CMOS battery voltage low	On	Off	Off	On
Input voltage for IPC too low (1)	On	Off	Slow flashing	Off
Internal system temperature too low	On	On	Off	Off
Internal system temperature too high	On	Off	Slow flashing	Slow flashing
Fan does not operate	On	On	Off	Slow flashing
Overheating protection, display brightness dimmed	Slow flashing	Irrelevant	Irrelevant	Irrelevant
Overheating protection, display switched off	Fast flashing	Irrelevant	Irrelevant	Irrelevant

- (1) Input voltage too low:  
As soon as the device is supplied with power, the input voltage is monitored. If the voltage already exceeds the limits at this point, it will not be possible to switch on the device. In this case, check the external power supply or the electrical circuit providing the power supply. The device will also switch off if the input voltage is no longer within the limits during operation.

Make a note of each LED's state (= error code) as well as the type and serial number of the device, and contact the noax hotline. You will then be provided with further information and suggestions of what to do next.



**Please find contact information on the back cover of this user manual.**



## 14.4 Repairs

Please observe the following instructions to ensure that your repairs are carried out quickly and smoothly:

- Please use the service form available on our website at **www.noax.com** . It can be downloaded as a PDF or Wordfile. Please include as much information on the form as possible and include it with the return shipment.
- Before shipping your device, you should backup the hard drive. **We are not liable for any accidental loss of your data.**
- If your system is password protected, please delete the administrator password or tell us what it is. If you fail to do so, we will reset the password if necessary.
- Please ensure that transportation is safe and suitable packaging is used. Use the original packaging if possible. **We are not liable for any damages that may occur during transportation.**
- We recommend using UPS Standard for shipping. You must prepay for shipping. We will also accept unpaid UPS Standard shipments during the warranty period. We do not accept extra services such as express services, etc.
- In urgent cases, we offer loan equipment for the duration of the repairs for a small fee. Please contact our hotline.



**Please find contact information on the back cover of this user manual.**

## 14.5 Download Center

You can find the “**Download Center**” on our website **www.noax.com**.

There you can access:

- Manuals and documentation for the Industrial PCs and accessories
- Drivers, e.g., for the mainboard chip set, graphics controller, and network controller
- Software, e.g., the nSMART™ software and test software for RFID readers

## 15 Technical data



### Caution

Subject to change without notice!



### Caution

Built-in options may affect the technical data of the Industrial PC.

The corresponding changes to the technical data of the IPC can be found in the documentation for the options in question.

## 15.1 General information for the Industrial PC

### 15.1.1 Environmental conditions

Air circulation:	Unobstructed circulation of surrounding air / cooling air must be provided at the rear panel.
Ambient temperature during operation:	The maximum temperatures specified for the different device types apply to the basic device configuration with an average of 20% system load (defined by noax load profile). Increased system load, additional expansion cards, options and peripheral devices reduce the maximum tolerable ambient temperature.
Ambient temperature during storage and transportation:	–4°F to 140°F (–20°C to +60°C) (–22°F / –30°C for devices with an extended temperature range)
Humidity:	5–90% relative humidity, non-condensing
Altitude during operation:	Max. 6562 feet (2000 m) above sea level

### 15.1.2 Operating position of the Industrial PC

The Industrial PC may only be operated in positions ranging from 90° upward to normal position (= facing forward) to 90° downward. The display is the point of reference.

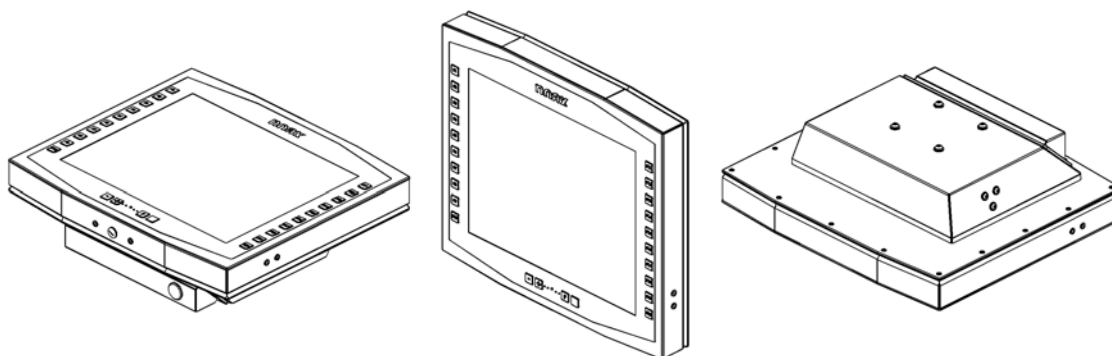


Fig. 79: Different operating positions of the IPC housing using the example of an S19 housing

### 15.1.3 Resistive touchscreen

System:	Resistive analog touchscreen
Quality:	Up to 1 million touches at one point (0.63 inches / 16 mm stylus, 0.6 lb / 250 g force, 2 activations per sec.) Up to 100,000 scrollings
Surface:	UV-resistant, coated polyester film (PET, hardcoated polyester) on glass carrier
Hardness:	3H (pencil hardness)

### 15.1.4 Projected capacitive touchscreen

System:	Projected capacitive touchscreen (PCAP)
Quality:	Unlimited touches and scrollings High level of resistance to environmental influences Multi-touch compatibility, pre-configured for 5 fingers, option of up to 16 fingers Operation when wearing gloves, palm rejection Option of operation when surface wet / dirty
Surface S15P, S19P, S21WP:	Strengthened 4 mm cover glass, back-printed to be UV-resistant
Surface C12P, C15P:	Strengthened 3 mm cover glass, back-printed to be UV-resistant

## 15.2 Technical data on the Industrial PC variants

### 15.2.1 Device type Compact – C12 and C12P

General	Compact – C12	Compact – C12P
Dimensions ( L x W x H ):	12.6inch x 10.2inch x 3.4inch 318 mm x 258 mm x 86 mm	12.6inch x 10.2inch x 3.4inch 318 mm x 258 mm x 87 mm
Weight (depending on setup):	Approx. 9.9 lb (Approx.4.5 kg)	Approx. 10.8 lb (Approx.4.9 kg)
Front:	Plastic, with paint finish	Aluminum, with structure paint finish
Enclosure:	Aluminum, with structure paint finish	Aluminum, with structure paint finish
Touchscreen:	Analog resistive touchscreen	Projected capacitive touchscreen
Power supply requirements		
Rated input voltage:	+24 V DC (direct current)	
Input voltage range:	18 V to 30 V DC (direct current)	
Input current:	Max. 5.0 A	
Display (30.7 cm / 12.1 inches – XGA)		
Size / Type:	30.7 cm / 12.1 inches / TFT	
Resolution:	XGA 1024 x 768	
Viewable color depth:	24 Bit	
Brightness:	Typ. 500 cd/m <sup>2</sup>	
IP protection class as per DIN EN 60529		
Housing protection class	IP65 (NEMA 4) (with suitable connector protection)	
Ambient temperature		
Start-up temperature:	32°F to 113°F (0°C to +45°C)	
Operating temperature:	23°F to 113°F (–5°C to +45°C)	
Ambient temperature with option “Extended pos. temperature range”		
Start-up temperature:	32°F to 131°F (0°C to +55°C)	
Operating temperature:	23°F to 131°F (–5°C to +55°C)	
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”		
Start-up temperature:	14°F to 113°F (–10°C to +45°C)	
Operating temperature:	5°F to 113°F (–15°C to +45°C)	
Ambient temperature with option “Extended temperature range”		
Start-up temperature:	–22°F to 131°F (–30°C to +55°C)	
Operating temperature:	–22°F to 131°F (–30°C to +55°C)	

## 15.2.2 Device type Compact – C15 and C15P

General	Compact – C15	Compact – C15P
Dimensions ( L x W x H ):	15.2inch x 12.8inch x 4.1inch (387 mm x 325 mm x 104mm)	15.2inch x 12.8inch x 4.0inch (387 mm x 325 mm x 101mm)
Weight (depending on setup):	Approx. 17.4 lb (Approx. 7.9 kg)	Approx. 18.3 lb (Approx. 8.3 kg)
Front:	Plastic, with paint finish	Aluminum, with structure paint finish
Enclosure:	Aluminum, with structure paint finish	Aluminum, with structure paint finish
Touchscreen:	Analog resistive touchscreen	Projected capacitive touchscreen
Power supply requirements		
Rated input voltage:	+ 24 V DC (direct current)	
Input voltage range:	18 V to 30 V DC (direct current)	
Input current:	Max. 5.0 A	
Power supply requirements with option “Internal power supply”		
Rated input voltage:	100 V to 120 V / 208 V to 240 V AC (alternating current)	
Nominal frequency range:	47 – 63 Hz	
Max. input current:	2.0 A	
Display (38.1 cm / 15 inches – XGA)		
Size / Type:	38.1 cm / 15 inches / TFT	
Resolution:	XGA 1024 x 768	
Viewable color depth:	24 Bit	
Brightness:	Typ. 400 cd/m <sup>2</sup>	
IP protection class as per DIN EN 60529		
Housing protection class	IP65 (NEMA 4) (with suitable connector protection)	
Ambient temperature		
Start-up temperature:	32°F to 113°F (0°C to +45°C)	
Operating temperature:	23°F to 113°F (–5°C to +45°C)	
Ambient temperature with option “Extended pos. temperature range”		
Start-up temperature:	32°F to 131°F (0°C to +55°C)	
Operating temperature:	23°F to 131°F (–5°C to +55°C)	
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”		
Start-up temperature:	14°F to 113°F (–10°C to +45°C)	
Operating temperature:	5°F to 113°F (–15°C to +45°C)	
Ambient temperature with option “Extended temperature range”		
Start-up temperature:	–22°F to 131°F (–30°C to +55°C)	
Operating temperature:	–22°F to 131°F (–30°C to +55°C)	

### 15.2.3 Device type Compact – C19

General	
Dimensions ( L x W x H ):	17.8 inches x 15.4 inches x 4.6 inches (452 mm x 390 mm x 117 mm)
Weight (depending on setup):	approx. 22.5 lb (approx. 10.2 kg)
Front:	Plastic, with paint finish
Housing:	Aluminum, with structure paint finish
Touchscreen:	Analog resistive touchscreen
Power supply requirements	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Power supply requirements with option “Internal power supply”	
Rated input voltage:	100 V to 120 V / 208 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A
Display (48.3 cm / 19 inches – SXGA)	
Size / Type:	48.3 cm / 19 inches / TFT
Resolution:	SXGA 1280 x 1024
Viewable color depth:	24 Bit
Brightness:	Typ. 300 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class	IP65 (NEMA 4) (with suitable connector protection)
Ambient temperature	
Start-up temperature:	32°F to 113°F (0°C to +45°C)
Operating temperature:	23°F to 113°F (–5°C to +45°C)
Ambient temperature with option “Extended pos. Temperature Range”	
Start-up temperature:	32°F to 131°F (0°C to +55°C)
Operating temperature:	23°F to 131°F (–5°C to +55°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 113°F (–10°C to +45°C)
Operating temperature:	5°F to 113°F (–15°C to +45°C)
Ambient temperature with option “Extended Temperature Range”	
Start-up temperature:	–22°F to 131°F (–30°C to +55°C)
Operating temperature:	–22°F to 131°F (–30°C to +55°C)

## 15.2.4 Device type Compact – C21W

### General

Dimensions ( L x W x H ):	21.6 inches x 14.0 inches x 4.6 inches (549 mm x 356 mm x 117 mm)
Weight (depending on setup):	approx. 24.9 lb (approx. 11.3 kg)
Front:	Plastic, with paint finish
Housing:	Aluminum, with structure paint finish
Touchscreen:	Analog resistive touchscreen

### Power supply requirements

Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A

### Power supply requirements with option “Internal power supply”

Rated input voltage:	100 V to 120 V / 208 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A

### Display (57.2 cm / 21.5 inches – Full-HD)

Size / Type:	57.2 cm / 21.5 inches / Widescreen TFT
Resolution:	Full-HD 1920 x 1080
Viewable color depth:	24 Bit
Brightness:	Typ. 300 cd/m <sup>2</sup>

### IP protection class as per DIN EN 60529

Housing protection class	IP65 (NEMA 4) (with suitable connector protection)
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### Ambient temperature

Start-up temperature:	32°F to 113°F (0°C to +45°C)
Operating temperature:	23°F to 113°F (–5°C to +45°C)

### Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”

Start-up temperature:	14°F to 113°F (–10°C to +45°C)
Operating temperature:	5°F to 113°F (–15°C to +45°C)

## 15.2.5 Device type Steel – S12

### General

Dimensions ( L x W x H ):	14.3 inches x 10 inches x 3.1 inches (364 mm x 254 mm x 78 mm)
Weight (depending on setup):	approx. 13.2 lb (approx. 6.0 kg)
Front and housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen

### Power supply requirements

Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A

### Display type “X” (30.7 cm/12.1 inches – XGA)

Size / Type:	30.7 cm / 12.1 inches / TFT
Resolution:	XGA 1024 x 768
Viewable color depth:	24 Bit
Brightness:	Typ. 500 cd/m <sup>2</sup>

### IP protection class as per DIN EN 60529

Housing protection class	IP65 (NEMA 4) (with suitable connector protection)
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### Ambient temperature

Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)

### Ambient temperature with option “Extended pos. temperature range”

Start-up temperature:	32°F to 122°F (0°C to +50°C)
Operating temperature:	23°F to 122°F (–5°C to +50°C)

### Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”

Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)

### Ambient temperature with option “Extended temperature range”

Start-up temperature:	–22°F to 122°F (–30°C to +50°C)
Operating temperature:	–22°F to 122°F (–30°C to +50°C)



## 15.2.6 Device type Steel – S15

### General

Dimensions ( L x W x H ):	16.7 inches x 12.3 inches x 3.9 inches (424 mm x 313 mm x 98 mm)
Weight (depending on setup):	approx. 18.7 lb (approx. 8.5 kg)
Front and housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen

### Power supply requirements

Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A

### Power supply requirements with option “Internal power supply”

Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A

### Display (38.1 cm / 15 inches – XGA)

Size / Type:	38.1 cm / 15 inches / TFT
Resolution:	XGA 1024 x 768
Viewable color depth:	24 Bit
Brightness:	Typ. 400 cd/m <sup>2</sup>

### IP protection class as per DIN EN 60529

Housing protection class	IP65 (NEMA 4) (with suitable connector protection)
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### Ambient temperature

Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)

### Ambient temperature with option “Extended pos. temperature range”

Start-up temperature:	32°F to 122°F (0°C to +50°C)
Operating temperature:	23°F to 122°F (–5°C to +50°C)

### Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”

Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)

### Ambient temperature with option “Extended temperature range”

Start-up temperature:	–22°F to 122°F (–30°C to +50°C)
Operating temperature:	–22°F to 122°F (–30°C to +50°C)

## 15.2.7 Device type Steel – S15-G2

General	
Dimensions ( L x W x H ):	16.5 inches x 14.2 inches x 5.2 inches (418 mm x 360 mm x 133 mm)
Weight (depending on setup):	approx. 31.3 lb (approx. 14.2 kg)
Front and housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen
Power supply requirements	
Rated input voltage:	100 V to 236 V AC (alternating current)
Nominal frequency range	47 – 63 Hz
Max. input current:	2.0 A
Power supply requirements with option “Without internal power supply”	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Display (38.1 cm / 15 inches – XGA)	
Size / Type:	38.1 cm / 15 inches / TFT
Resolution:	XGA 1024 x 768
Viewable color depth:	24 Bit
Brightness:	Typ. 400 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class	IP69k (with suitable connector protection)
Ambient temperature	
Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)
Ambient temperature with option “Extended pos. temperature range”	
Start-up temperature:	32°F to 122°F (0°C to +50°C)
Operating temperature:	23°F to 122°F (–5°C to +50°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)
Ambient temperature with option “Extended temperature range”	
Start-up temperature:	–22°F to 122°F (–30°C to +50°C)
Operating temperature:	–22°F to 122°F (–30°C to +50°C)

## 15.2.8 Device type Steel – S19

General	
Dimensions ( L x W x H ):	19.6 inches x 17.2 inches x 5.4 inches (498 mm x 438 mm x 136 mm)
Weight (depending on setup):	approx. 47.4 lb (approx. 21.5 kg)
Front and housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen
Power supply requirements	
Rated input voltage:	100 V to 236 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A
Power supply requirements with option “Without internal power supply”	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Display (48.3 cm / 19 inches – SXGA)	
Size / Type:	48.3 cm / 19 inches / TFT
Resolution:	SXGA 1280 x 1024
Viewable color depth:	24 Bit
Brightness:	Typ. 350 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class	IP69k (with suitable connector protection)
Ambient temperature	
Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)
Ambient temperature with option “Extended pos. temperature range”	
Start-up temperature:	32°F to 122°F (0°C to +50°C)
Operating temperature:	23°F to 122°F (–5°C to +50°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)
Ambient temperature with option “Extended temperature range”	
Start-up temperature:	–22°F to 122°F (–30°C to +50°C)
Operating temperature:	–22°F to 122°F (–30°C to +50°C)

## 15.2.9 Device type Panel – P15

General	
Dimensions ( L x W x H ):	16.6 inches x 12.2 inches x 3.8 inches (422 mm x 311 mm x 96 mm)
Installation dimensions:	see Chapter 8.9
Weight (depending on setup):	approx. 15.2 lb (approx. 6.9 kg)
Front and housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen
Power supply requirements	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Display (38.1 cm / 15 inches – XGA)	
Size / Type:	38.1 cm / 15 inches / TFT
Resolution:	XGA 1024 x 768
Viewable color depth:	24 Bit
Brightness:	Typ. 400 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class, front	IP65 (NEMA 4) (when installed)
Ambient temperature	
Start-up temperature:	32°F to 113°F (0°C to +45°C)
Operating temperature:	23°F to 113°F (–5°C to +45°C)
Ambient temperature with option “Extended pos. temperature range”	
Start-up temperature:	32°F to 131°F (0°C to +55°C)
Operating temperature:	23°F to 131°F (–5°C to +55°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 113°F (–10°C to +45°C)
Operating temperature:	5°F to 113°F (–15°C to +45°C)
Ambient temperature with option “Extended temperature range”	
Start-up temperature:	–22°F to 131°F (–30°C to +55°C)
Operating temperature:	–22°F to 131°F (–30°C to +55°C)

## 15.2.10 Device type Steel – S15P

### General

Dimensions ( L x W x H ):	15.7 inches x 13.5 inches x 3.9 inches (399.5 mm x 342.5 mm x 99.5 mm)
Weight (depending on setup):	approx. 19.2 lb (approx. 8.7 kg)
Front:	Strengthened 0.16 inch (4 mm) cover glass Stainless steel V2A (1.4301)
Housing:	Stainless steel V2A (1.4301)
Touchscreen:	Projected capacitive touchscreen

### Power supply requirements

Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A

### Power supply requirements with option “Internal power supply”

Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A

### Display (38.1 cm / 15 inches – XGA)

Size / Type:	38.1 cm / 15 inches / TFT
Resolution:	XGA 1024 x 768
Viewable color depth:	24 Bit
Brightness:	Typ. 400 cd/m <sup>2</sup>

### IP protection class as per DIN EN 60529

Housing protection class Variant “Hygienic (IP65)”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP69k)”	IP69k (with suitable connector protection)

### Ambient temperature

Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)

### Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”

Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)

### Ambient temperature with option “Extended neg. temperature range (-22°F / -30°C)”

Start-up temperature:	–22°F to 104°F (–30°C to +40°C)
Operating temperature:	–22°F to 104°F (–30°C to +40°C)

## 15.2.11 Device type Steel – S15R

### General

Dimensions ( L x W x H ):	15.7 inches x 13.5 inches x 3.9 inches (399.5 mm x 342.5 mm x 99.5 mm)
Weight (depending on setup):	approx. 19.2 lb (approx. 8.7 kg)
Front:	Coated polyester film on glass carrier Stainless steel V2A (1.4301)
Housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen

### Power supply requirements

Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A

### Power supply requirements with option “Internal power supply”

Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A

### Display (38.1 cm / 15 inches – XGA)

Size / Type:	38.1 cm / 15 inches / TFT
Resolution:	XGA 1024 x 768
Viewable color depth:	24 Bit
Brightness:	Typ. 400 cd/m <sup>2</sup>

### IP protection class as per DIN EN 60529

Housing protection class Variant “Hygienic (IP65)”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP69k)”	IP69k (with suitable connector protection)

### Ambient temperature

Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)

### Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”

Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)

### Ambient temperature with option “Extended neg. temperature range (-22°F / -30°C)”

Start-up temperature:	–22°F to 104°F (–30°C to +40°C)
Operating temperature:	–22°F to 104°F (–30°C to +40°C)

## 15.2.12 Device type Steel – S19P

General	
Dimensions ( L x W x H ):	18.0 inches x 16.6 inches x 3.9 inches (457 mm x 421 mm x 99.5 mm)
Weight (depending on setup):	approx. 24.3 lb (approx. 11.0 kg)
Front:	Strengthened 0.16 inch (4 mm) cover glass Stainless steel V2A (1.4301)
Housing:	Stainless steel V2A (1.4301)
Touchscreen:	Projected capacitive touchscreen
Power supply requirements	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Power supply requirements with option “Internal power supply”	
Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A
Display (48.3 cm / 19 inches – SXGA)	
Size / Type:	48.3 cm / 19 inches / TFT
Resolution:	SXGA 1280 x 1024
Viewable color depth:	24 Bit
Brightness:	Typ. 350 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class Variant “Production”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP65)”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP69k)”	IP69k (with suitable connector protection)
Ambient temperature	
Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)
Ambient temperature with option “Extended neg. temperature range (-22°F / -30°C)”	
Start-up temperature:	–22°F to 104°F (–30°C to +40°C)
Operating temperature:	–22°F to 104°F (–30°C to +40°C)

### 15.2.13 Device type Steel – S19R

General	
Dimensions ( L x W x H ):	18.0 inches x 16.6 inches x 3.9 inches (457 mm x 421 mm x 99.5 mm)
Weight (depending on setup):	approx. 24.3 lb (approx. 11.0 kg)
Front:	Coated polyester film on glass carrier Stainless steel V2A (1.4301)
Housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen
Power supply requirements	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Power supply requirements with option “Internal power supply”	
Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A
Display (48.3 cm / 19 inches – SXGA)	
Size / Type:	48.3 cm / 19 inches / TFT
Resolution:	SXGA 1280 x 1024
Viewable color depth:	24 Bit
Brightness:	Typ. 350 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class Variant “Production”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP65)”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP69k)”	IP69k (with suitable connector protection)
Ambient temperature	
Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 104°F (–10°C to +40°C)
Operating temperature:	5°F to 104°F (–15°C to +40°C)
Ambient temperature with option “Extended neg. temperature range (-22°F / -30°C)”	
Start-up temperature:	–22°F to 104°F (–30°C to +40°C)
Operating temperature:	–22°F to 104°F (–30°C to +40°C)



## 15.2.14 Device type Steel – S21WP

General	
Dimensions ( L x W x H ):	21.9 inches x 15.2 inches x 3.9 inches (557 mm x 387 mm x 99.5 mm)
Weight (depending on setup):	approx. 25.4 lb (approx. 11.5 kg)
Front:	Strengthened 4 mm cover glass Stainless steel V2A (1.4301)
Housing:	Stainless steel V2A (1.4301)
Touchscreen:	Projected capacitive touchscreen

Power supply requirements	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A

Power supply requirements with option “Internal power supply”	
Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A

Display (57.2 cm / 21.5 inches – Full-HD)	
Size / Type:	57.2 cm / 21.5 inches / Widescreen TFT
Resolution:	Full-HD 1920 x 1080
Viewable color depth:	24 Bit
Brightness:	Typ. 300 cd/m <sup>2</sup>

IP protection class as per DIN EN 60529	
Housing protection class Variant “Production”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP65)”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP69k)”	IP69k (with suitable connector protection)

Ambient temperature	
Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)

Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 113°F (–10°C to +45°C)
Operating temperature:	5°F to 113°F (–15°C to +45°C)

## 15.2.15 Device type Steel – S21WR

General	
Dimensions ( L x W x H ):	21.9 inches x 15.2 inches x 3.9 inches (557 mm x 387 mm x 99.5 mm)
Weight (depending on setup):	approx. 25.4 lb (approx. 11.5 kg)
Front:	Coated polyester film on glass carrier Stainless steel V2A (1.4301)
Housing:	Stainless steel V2A (1.4301)
Touchscreen:	Analog resistive touchscreen
Power supply requirements	
Rated input voltage:	+24 V DC (direct current)
Input voltage range:	18 V to 30 V DC (direct current)
Input current:	Max. 5.0 A
Power supply requirements with option “Internal power supply”	
Rated input voltage:	95 V to 240 V AC (alternating current)
Nominal frequency range:	47 – 63 Hz
Max. input current:	2.0 A
Display (57.2 cm / 21.5 inches – Full-HD)	
Size / Type:	57.2 cm / 21.5 inches / Widescreen TFT
Resolution:	Full-HD 1920 x 1080
Viewable color depth:	24 Bit
Brightness:	Typ. 300 cd/m <sup>2</sup>
IP protection class as per DIN EN 60529	
Housing protection class Variant “Hygienic (IP65)”	IP65 (NEMA 4) (with suitable connector protection)
Housing protection class Variant “Hygienic (IP69k)”	IP69k (with suitable connector protection)
Ambient temperature	
Start-up temperature:	32°F to 104°F (0°C to +40°C)
Operating temperature:	23°F to 104°F (–5°C to +40°C)
Ambient temperature with option “Extended neg. temperature range (14°F / -10°C)”	
Start-up temperature:	14°F to 113°F (–10°C to +45°C)
Operating temperature:	5°F to 113°F (–15°C to +45°C)

## 15.3 Technical data on the mainboards

### 15.3.1 Mainboard N11G

Processor (CPU)	Intel Core i7-3555LE
Chipset	QM77
Graphics controller	Intel HD Graphics 4000 (DirectX 11, Open GL 4.0 and OpenCL)
Memory	4 GB, DDR3, Dual Channel, up to 16 GB (2 SODIMM sockets)
Network	LAN 1: Intel 82579 10 Mbit / 100 Mbit / 1000 MBit LAN 2: Intel i210 10 Mbit / 100 Mbit / 1000 MBit
Hard drive controller	Integrated Intel SATA controller (6 Gb/s), RAID support
External interfaces	2 x RS232 module (COM1, COM2) optional RS422 or RS485 modules available
	4 x USB 3.0, 2 x USB 2.0 (additional internal 2 x USB 2.0)
	2 x Network (Ethernet, RJ45)
	1 x DVI-I monitor connector (analog monitors can be connected via a simple adapter)
	Optional 1 x Parallel port LPT (ECP, EPP or SPP compatible)
Expansion slots	2 x PCI Express Mini Card
	2 x Slots for expansion cards (max. 7.9 inches / 200 mm long) <sup>(3)</sup> , optionally as
	2 x PCI 1 x PCI and 1 x PCIe x16 <sup>(1)</sup> 2x PCIe (x8 <sup>(2)</sup> and x16 <sup>(1)</sup> )
Microprocessor-controlled system management	Temperature monitoring
	Voltage monitoring
	Brightness control
	Power management
	Touchcontroller (panel control and recalibration)
	MCU setup
	Function keys management
	Parameter adjustable via setup file

(1) PCIe x16 slot: 4 electrical lanes

(2) PCIe x8 slot: 4 electrical lanes

(3) With an internal power supply one of the two PCI / PCIe slots is only available as a low-profile slot

### 15.3.2 Mainboard N11F

Processor (CPU)	Intel Core i3-3217UE
Chipset	QM77
Graphics controller	Intel HD Graphics 4000 (DirectX 11, Open GL 4.0 and OpenCL)
Memory	4 GB, DDR3, Dual Channel, up to 16 GB (2 SODIMM sockets)
Network	LAN 1: Intel 82579 10 Mbit / 100 Mbit / 1000 MBit LAN 2: Intel i210 10 Mbit / 100 Mbit / 1000 MBit
Hard drive controller	Integrated Intel SATA controller (6 Gb/s), RAID support
External interfaces	2 x RS232 module (COM1, COM2) optional RS422 or RS485 modules available  4 x USB 3.0, 2 x USB 2.0 (additional internal 2 x USB 2.0)  2 x Network (Ethernet, RJ45)  1 x DVI-I monitor connector (analog monitors can be connected via a simple adapter)  Optional 1 x Parallel port LPT (ECP, EPP or SPP compatible)
Expansion slots	2 x PCI Express Mini Card  2 x Slots for expansion cards (max. 7.9 inches / 200 mm long) <sup>(3)</sup> , optionally as 2 x PCI 1 x PCI and 1 x PCIe x16 <sup>(1)</sup> 2x PCIe (x8 <sup>(2)</sup> and x16 <sup>(1)</sup> )
Microprocessor-controlled system management	Temperature monitoring Voltage monitoring Brightness control Power management Touchcontroller (panel control and recalibration) MCU setup Function keys management Parameter adjustable via setup file

(1) PCIe x16 slot: 4 electrical lanes

(2) PCIe x8 slot: 4 electrical lanes

(3) With an internal power supply one of the two PCI / PCIe slots is only available as  
a low-profile slot

### 15.3.3 Mainboard N11C

Processor (CPU)	Intel Celeron 1047UE
Chip set	HM76
Graphics controller	Intel HD Graphics (DirectX 11, Open GL 4.0)
Memory	4 GB, DDR3, Dual Channel, up to 16 GB (2 SODIMM sockets)
Network	LAN 1: Intel 82579 10 MBit/100 MBit/1000 MBit LAN 2: Intel i210 10 MBit/100 MBit/1000 MBit
Hard drive controller	Integrated Intel SATA controller (6 Gb/s)
External interfaces	Optional 2 x RS232 module (COM1, COM2) optional RS422 or RS485 modules available  4 x USB 3.0, additional internal 1 x USB 2.0  2 x Network (Ethernet, RJ45)  1 x DVI-I monitor connector (analog monitors can be connected via a simple adapter)  Optional 1 x Parallel port LPT (ECP, EPP or SPP compatible)
Expansion slots	1 x PCI Express Mini Card  2 x Slots for expansion cards (max. 7.9 inches / 200 mm long) <sup>(3)</sup> , optionally as 1 x PCIe x16 <sup>(1)</sup> 2x PCIe (x8 <sup>(2)</sup> and x16 <sup>(1)</sup> )
Microprocessor-controlled system management	Temperature monitoring Voltage monitoring Brightness control Power management Touchcontroller (panel control and recalibration) MCU setup Function keys management Parameter adjustable via setup file

(1) PCIe x16 slot: 4 electrical lanes

(2) PCIe x8 slot: 4 electrical lanes

(3) With an internal power supply one of the two PCIe slots is available as a low-profile slot



#### Caution:

There are no PCI slots available with this mainboard type.

### 15.3.4 CMOS battery

Only "Panasonic BR2032" CMOS batteries or those of equivalent types approved by noax should be used.

## 15.4 Technical data on the external power supplies

### 15.4.1 External power supply

General	
Dimensions (L x W x H):	4.7 inches x 2.0 inches x 1.2 inches (120 mm x 52 mm x 31 mm)
Weight:	approx. 1.1 lb (approx. 0.5 kg, incl. mounting bracket)
Housing:	Plastic (polycarbonate)
Conformity:	CE, FCC
Power supply requirements	
Input voltage:	100 to 240 V AC (alternating current)
Input frequency:	47 – 63 Hz
Input current:	Max. 1.5 A
Output voltage:	+24 V stabilized
Output current:	Max. 3.0 A
Ambient temperature	
Operation:	–4°F to 131°F (–20°C to +55°C) Derating from 104°F (+40°C): –2.5% per °C
Storage and transportation:	–4°F to 176°F (–20°C to +80°C)
IP protection class as per DIN EN 60529	
Housing protection class	IP40

### 15.4.2 External power supply IP65 (NEMA 4) (24 V)

General	
Dimensions (L x W x H):	8.7 inches x 5.7 inches x 2.1 inches (220 mm x 144 mm x 54 mm)
Weight:	approx. 1.1 lb (approx. 0.5 kg)
Housing:	Aluminum, with paint finish
Conformity:	CE, FCC
Power supply requirements	
Input voltage:	100 to 240 V AC (alternating current)
Input frequency:	47 – 63 Hz
Input current:	Max. 1.4 A
Output voltage:	+24 V
Output current:	Max. 2.5 A
Ambient temperature	
Operation:	–4°F to 122°F (–20°C to +50°C)
Storage and transportation:	–4°F to 176°F (–20°C to +80°C)
IP protection class as per DIN EN 60529	
Housing protection class	IP65 (NEMA 4)

## 15.5 Interface module

### 15.5.1 noax RS232 interface module

Technical data	
Communication speed:	Max. 115.2 kBaud
Input resistance:	Min. 3 kOhm, max. 7 kOhm
Input voltage:	Max. +/- 25 V
Output voltage:	Typ. +/- 10 V
Short-circuit current:	Typ. +/- 30 mA
Cable capacity:	Max. 8.0 nF
Voltage for external devices:	5 V or 12 V at Pin 4 and Pin 9, max. 1.0 A

## 15.6 Fuses



### **Danger**

Fuses may be replaced by authorized specialist personnel only. The specified technical data regarding fuses should be complied with at all times.

Please contact our service team (see Chapter 14.3) if you have any further questions regarding fuses or spare fuses.



### **Danger**

Do not install the “F2” fuse with device type S15-G2, S19 as well as at Industrial PCs with option “Internal power supply”.

**Exception:** The option “Without internal power supply” with S15-G2 and S19.



### **Warning**

**The Industrial PC have to be completely disconnected from the power supply before the device is opened for upgrades or service work!**

To do this, disconnect the power cord from the “Power 24V” connector on the Industrial PC or disconnect the device mains cord. It is not enough to just shut down the operating system!



**Any fuses on the mainboard that are not listed in this chapter cannot be replaced.**

### 15.6.1 Devices without internal power supply

- ① This applies to device types C12, C12P, C15, C15P, C19, C21W, S12, S15, P15, S15P, S15R, S19P, S19R, S21WP, S21WR as well as S15-G2 and S19 without internal power supply

The input fuse with the description “F2” is located on the mainboard in a socket with protection cap near the power input plug.

Type of fuse: Glass tube fuse, format 0.2 inches x 0.8 inches (5 x 20 mm), characteristic **5 A / 250 V / “slow-acting” behavior according to IEC 60127-2.**

### 15.6.2 Device type S15-G2 and S19 as well as C15, C15P, C19, C21W, S15P, S15R, S19P, S19R, S21WP, S21WR with option “Internal power supply”

The holder for the two supply voltage fuses is located below the power cord connector.

To remove the fuse holder, push down the small black lever on it. Now the fuse holder can be pulled out.

Type of fuse: 2 x glass tube fuse, format 0.2 inches x 0.8 inches (5 x 20 mm), characteristic **2 A / 250 V / “slow-acting” behavior according to IEC 60127-2.**

### 15.6.3 Device type S15 with option “Internal power supply”

The holder for the supply voltage fuses is located in the connector area beside the power cord connector.

To remove, use a flat-head screwdriver to turn the holder insert a quarter turn.

Type of fuse: 1 x glass tube fuse, format 0.2 inches x 0.8 inches (5 x 20 mm), characteristic **2 A / 250 V / “slow-acting” behavior according to IEC 60127-2.**



## 15.7 Requirements for additional components

All additional components (keyboards, printers, expansion cards, etc.) have to be approved for industrial usage.

## 15.8 Expansion cards for the Industrial PC

Expansion cards increase the system temperature and lower the maximum permissible ambient temperature.

- ① **For Industrial PC types C12 and C12P as well as for Industrial PCs with option “Internal power supply”, only low-profile PCI / PCIe cards can be inserted in Slot 1.**



### Warning

Expansion cards should together not exceed a maximum total power consumption of 30 W. Observe maximum permissible currents at all times!

### 15.8.1 Expansion cards in the PCI slot

- ① **The PCI slots comply with PCI specification Rev. 2.1.**  
5 V and universal (3.3 V & 5 V) PCI cards with a length of 6.8 inches (173 mm) can be used.

Max. current consumption for 3.3 V:	4.0 A
Max. current consumption for 5 V:	3.0 A
Max. current consumption for 12 V:	0.5 A
Max. current consumption for –12 V:	0.1 A

- ① **The Low Profile PCI slots comply with PCI specification Rev. 2.1.**  
5 V and universal (3.3 V & 5 V) Low Profile PCI cards with a length MD1 of 4.7 inches (120 mm) and MD2 of 6.6 inches (168 mm) can be used.

Max. current consumption for 3.3 V:	4.0 A
Max. current consumption for 5 V:	3.0 A
Max. current consumption for 12 V:	0.5 A
Max. current consumption for –12 V:	0.1 A



### Warning

The PCI card should not exceed a maximum total power consumption of 15 W per slot! Observe maximum permissible currents at all times!  
Expansion cards increase the internal temperature and lower the maximum permissible ambient temperature.

## 15.8.2 Expansion cards in the PCI Express slot



**The PCI Express slots comply with PCI specification Rev. 2.0.**

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Max. current consumption for 3.3 V: 3.0 A

---

Max. current consumption for 12 V: 2.1 A

---



### **Warning**

The PCI Express cards should not exceed a maximum total power consumption of 25 W for both slots! Observe maximum permissible currents at all times! Expansion cards increase the internal temperature and lower the maximum permissible ambient temperature.

## 15.8.3 Expansion cards in the PCI Express Mini Card slot



**The PCI Express slots comply with PCI specification Rev. 2.0.**

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Max. current consumption for 3.3 V: 1.1 A

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Max. current consumption for 1.5 V: 0.375 A

---



### **Warning**

The PCI Express Mini Card should not exceed a maximum total power consumption of 3.0 W! Observe maximum permissible currents at all times!

## 16 Disposal

At the end of its service life, the Industrial PC is not to be disposed of as normal household waste or via your local waste collection center. It should instead be returned to the noax service department for disposal.

For more information, please contact the noax service department.

By reusing, recycling or utilizing old devices in any other way, you are making an important contribution to the protection of our environment.



**Please find contact information on the back cover of this user manual.**

### **Disposal of used batteries**

You are legally obliged (Battery Directive) to return all used batteries. Disposal with normal household waste is strictly forbidden.

Batteries containing pollutants are marked with the corresponding symbols to remind you of the fact that they must not be disposed of with your household waste.

The designations for the most important heavy metals are Cd (cadmium), Hg (mercury), and Pb (lead).

Please deliver used batteries to a local recycling company free of charge or contact the noax service department for further information.

This way you will be complying with your legal obligations and will be contributing to the protection of the environment.



### **Warning**

**Batteries and electrical devices must not be disposed of with your household waste.**

## 17 Declarations of conformity

### 17.1 CE conformity

All noax Industrial PCs mentioned in this User Manual N11 comply with the applicable standards, requirements and regulations for CE conformity.

- ① The noax Industrial PCs are authorized for Class A, which means they may not be used in living areas.
- ① Please check the declaration of conformity for your Industrial PC for further information.

### 17.2 FCC conformity

All noax Industrial PCs mentioned in this User Manual N11 comply with the applicable standards, requirements and regulations for FCC conformity.

The following additional information is necessary to meet the FCC requirements:

- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.
- These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
- This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
- Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### 17.3 WEEE

The company noax Technologies AG (EAR reg. no. DE27359889) complies with the requirements of the WEEE (Waste Electrical and Electronic Equipment) Directive and offers to take back old devices for disposal free of charge (with the exclusion of transportation costs to noax Technologies AG).

### 17.4 Declarations of conformity as downloads

All current declarations of conformity can be downloaded from the “**Download Center**” – “**Certificates**” section on our website **www.noax.com**.

There you can also find declarations of conformity for further standards that are also required for some devices.

If you are unable to access our website, please contact our hotline.

## **18      Your notes**







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