

Instruction Manual DIN Rail Box PC EmbeddedLine DR2100

Language: English



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*Perfect
Industrial IT* **TL** *electronic*

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1 General information

1.1 Conventions

The terms *industrial PC* and *device* are also used in this documentation for the product designation *DR2100*.

1.2 Validity of this documentation

This documentation is valid for all supplied variants of the device and describes the deliveries from **December 2017** onwards.

1.3 Declaration of conformity



The device fulfils the requirements for electromagnetic compatibility and conforms to the requirements in the EMC Directive 2014/30/EU.

1.4 Classification in the information landscape

The device can be equipped with various components and add-ons. Information on the components can be found in the descriptions, manuals or data media that may be enclosed separately. They are to be treated as part of this instruction manual.

Please refer to the corresponding manuals for any further instructions on using any software that may be supplied with the device.

1.5 Purpose of this documentation

This instruction manual contains basic information which you require for start-up and use of the unit.

It is directed towards all persons who put the unit into operation, use it or connect it themselves, and to all service and maintenance staff who work on the unit themselves.

Before use, installation, start-up, maintenance and repair of the components, it is essential to take note of the following instructions and explanations.

You can find further information and operating details in the technical documentation (English) on the supplied data medium.

1.6 Qualified personnel

The respective unit or system must only be set up and operated in conjunction with this manual and only by **qualified personnel**.

Qualified personnel for the purpose of the safety instructions in this manual is defined as follows: Persons who are authorised to put into operation, to ground and to designate devices, systems and electric circuits according to the safety standards.

Each user of the unit must read this instruction manual.

Each user must know all functions of the installed software which are available to him.

1.7 Warranty and liability

Our "General Terms and Conditions of Sale" are basically applicable. These are placed at the operator's disposal at the date of the purchase contract at the latest. Warranty and liability claims for damage to persons and property are excluded, if they originate from one or several of the following:

- other than specified use, misapplication,
- improper installation, start-up, operation, repair or maintenance,
- operation with defective or improperly mounted or non-functioning safety installations,
- non-observance of the instructions given in the manual regarding transport, storage, installation, start-up, operation, limit values or maintenance,
- unauthorised modification,
- insufficient control of wear parts,
- catastrophic damage due to foreign body and Act of God.

Furthermore, warranty claims for software are not accepted

- for faults inevitable according to the state of the art at the time of delivery or service and in consideration of the intended use and price, except faults which are unacceptable to the customer,
- if they are associated with software copies not delivered by us,
- in case of alterations to the software by the customer, even if the fault occurs in an unaltered part of the software, unless the fault is definitely not associated with the alteration.

1.8 Terms of liability

The qualified personnel must ensure that the use or the application, respectively, of the described unit complies with all safety requirements including all applicable provisions of law, rules and regulations as well as standards.

This documentation was carefully worked out. The units described are however continually improved. Therefore, the described performance characteristics, standards and other criteria will not be completely verified in either case. None of the explanations in this instruction manual represents a guarantee or a statement of the presumed applications according to the contract.

If it contains technical failures or typing errors, we reserve the right to change this manual without notice. No claims for modifications to already delivered products can be deduced from the details, pictures and descriptions in this documentation.

1.9 Exclusion of liability

We have checked the content of this document for accordance with the described hardware. However, variations cannot be excluded, therefore we cannot ensure full accordance of the present instruction manual with the product. The specifications given in this document are regularly reviewed, any necessary corrections are included in the following issues.

2 General safety instructions

2.1 Specific safety instructions and symbols used

In the following instruction manual, specific safety instructions are given in order to show the inevitable remaining risks during operation of the unit. These remaining risks include threat to life and physical condition and danger to machine, material and environment.

The symbols used in the instruction manual shall especially attract the readers' attention to the safety instructions!



This symbol refers to danger to persons.
(threat of life and physical condition)



This symbol refers to danger to machine, material and environment.

The main intention of the safety instructions is to prevent damage to persons.

- If a “**Danger**” warning triangle is placed beside safety instructions, danger to the unit, material and environment can therefore not be excluded.
- If an “**Attention**” warning triangle is placed beside safety instructions, danger to persons is unlikely.

The symbols used cannot replace the wording of the safety instructions. Please always read the complete text!



This symbol does not refer to any safety instructions but to information for better understanding.

2.2 Operator's duty of care

The operator must ensure that

- the unit is only used in the specified way (see paragraph “**Intended application**” in chapter “**Product description**”).
- the unit is only operated in proper, fully functional condition.
- the complete instruction manual is always kept near the location of the unit in legible condition.
- only qualified staff like electricians or electrical engineering technicians will open the housing of the unit.
- the unit is operated, maintained and repaired only by sufficiently qualified and authorised personnel.
- this personnel is regularly instructed in all relevant questions of operational safety and environmental protection and knows the instruction manual, especially the safety instructions included therein.
- all warning and safety labels attached to the unit are not removed and remain legible.



National regulations according to type of machine

Depending on the type of machine or facility the unit is applied in, there are national regulations for operating such machines and facilities the operator must comply with. Among other things, these regulations specify in which intervals the control system must be checked.

The operator has to arrange for this examination in due time.

2.3 Operating safety

Please follow the instructions in this section on how to operate this device safely.

- Do not let children play with electrical devices unsupervised. Children are not always aware of potential hazards.
- Keep packaging material such as plastic film away from children. There is a risk of suffocation if used improperly.
- The device may be damaged if used under extreme environmental conditions.
- Do not insert anything into the device through the slots and openings. This could result in an electrical short circuit or even ignite a fire which will damage your device.



Housing:

- Never open the housing of the device when the power supply is connected! There is a risk of electric shock or a short circuit.
- Switch off the device immediately or do not switch it on at all and contact Customer Service if the housing of the device is damaged or liquid has penetrated into the device. Have the device inspected by Customer Service as it is no longer safe to operate. There is a risk of electric shock!

With included mains adapter or device plug the following applies:

- Never open the housing of the mains adapter! There is a risk of electric shock or a short circuit. The housing does not contain any parts requiring maintenance.
- To prevent the risk of damage in the event of a lightning strike, do not use the device with the mains adapter or device plug attached during a thunderstorm.
- Switch off the device immediately or do not switch it on at all and contact Customer Service if the mains adapter or the device plug and the associated plug or cable are burned or damaged. Replace a damaged mains adapter or device plug with original spare parts. A defective mains adapter or device plug must not be repaired under any circumstances.

2.4 Fundamental safety measures

Connection

- Check that you have the correct mains voltage. Observe the information stated on the type plate in this process.

With included mains adapter or device plug the following applies:

- Use only the supplied mains adapter or device plug.
- The socket outlet must be close to the device and easily accessible.
- Operate the mains adapter and the device plug for your device only on earthed mains sockets with 100–240 volt alternating current at 50–60 Hz. If you are not sure about the power supply at the set-up location, please ask your power supplier.



Cabling

Position the cables so that they cannot be stepped on or tripped over.

To avoid damaging the cables, do not place any objects on them.



Repairs

Repairs to the unit must only be carried out by authorised and trained staff.

Unauthorised opening and inappropriate repairs may cause damage to the users and substantial material damage.

Please contact our Service Department. You can find the contact details in the chapter **“Assistance in case of malfunction”**.



Opening the housing

The unit housing must only be opened by qualified personnel!

The operator must take care that only qualified staff like electricians or electrical engineering technicians will open the housing of the unit.



Disconnect from peripheral devices!

Before opening the housing and whenever the unit is not used for control of a machine, e.g. during the operational test after repair, the unit must be disconnected from the peripheral devices. This is done by removing all connectors.



Disconnect supply voltage!

Before opening the unit, the power supply must be disconnected.

Do not exchange any parts under voltage!



Never open a power supply (if included in the delivery)!

Power supplies do not contain any parts to be maintained.
Defective power supplies must only be exchanged completely.



Assembly work may cause damage to the unit

- if metallic objects like screws or tools fall on the PCBs,
- if connecting cables inside the unit are unplugged or plugged during operation,
- if plug-in cards are fitted or removed during operation of the unit.



System expansions

Only system expansions designed for use with this unit are allowed to be installed. Other system expansions may cause damage to the system or breach security.

The warranty claim will expire if you cause defects to the unit by installing or exchanging system expansions.



Battery

This unit contains a battery. Batteries must only be exchanged by qualified personnel.

Inappropriate exchange of the battery will cause explosion hazard. The battery must be only replaced with the same or an equivalent type recommended by the battery manufacturer. As to disposal of the used batteries, the local statutory provisions must be complied with.



Explosion hazard and pollution!

Therefore, please do not throw batteries into fire, do not solder, open, short-circuit, connect reversely or heat them over 100 °C. Dispose of them according to the regulations and protect them against direct insolation, humidity and condensation.

ESD handling procedures

Modules containing components vulnerable to ESD (electrostatic discharge) may be marked with the following label:



If you handle ESD modules, it is essential that you comply with the following instructions:

- Before you handle ESD modules, you have to discharge yourself from static (e.g. by touching a grounded object).
- The devices and tools used must be free from static charge.
- Always disconnect the power supply.
- Hold the ESD modules only at their edges.
- Do not touch any pins or printed circuits on an ESD module.



3 Product description

You'll find the paragraph “**Technical data**” in chapter “**Annex**”.

3.1 Intended application

The industrial PC is designed only for fixed mounting in machine and plant engineering. It was designed for machine-oriented, industrial applications, such as

- measurement and control of process and machine data,
- operation and visualisation of production sequences,
- image processing and image editing within the scope of quality inspections,
- recording and management of data.

The device may **not** be utilised in areas where there is a risk of explosion.

If the unit is used for applications other than these specified above, safe operation cannot be assured.

Not the producer, but the operator of the unit will be responsible for all damage to persons and property resulting from improper use!



3.2 Layout



Front view



Interfaces and controls

All interfaces and controls and are located on the **front and upper side**.

The unit can **not** be switched on and off with the **reset** push button.

The button does not separate the unit from the main power supply!

The reset button reboots the system in operation.





Rear view

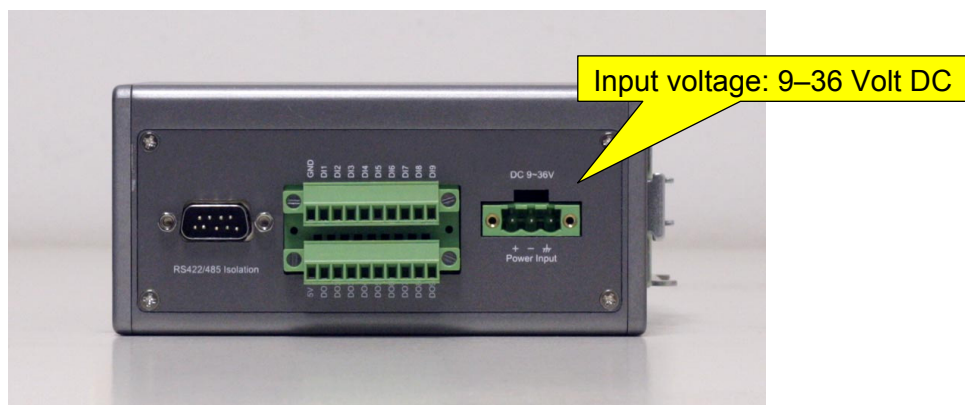
Type label

The type label is affixed to the **bottom** side of the unit.

3.3 Connections

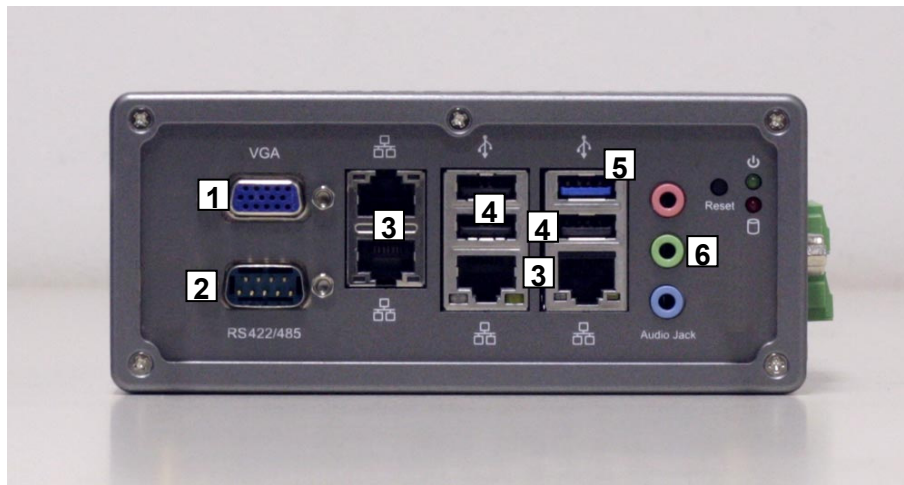
Power supply

On the **upper** side of the housing there is a power inlet socket.



Interfaces

The unit is provided with interfaces as shown.



Front side

- (1) VGA output
- (2) Serial RS-232/422/485 interface
- (3) 4 × RJ-45 Ethernet
- (4) 3 × USB 2.0
- (5) 1 × USB 3.0
- (6) Line in / out / mic



Upper side

- (6) Serial RS-422/485 interface
- (7) 20-pin DIDO terminal block
- (8) 3-pin power input terminal block

4 Start-up and handling

Please also pay regard to the chapters “General information” and “General safety instructions”!



4.1 Storage, transport and setting up

Storage

Please observe the prescribed storage conditions (see paragraph “**Technical data**” in chapter „Annex“).

Transport

The installed components are sensitive to strong vibrations and shock. Please protect the unit against strong mechanical impact during transport.

Use the original packing for transport and despatch!

Risk of damage to the unit!

During cold weather and when the unit is exposed to extreme fluctuations of temperature, please take care that no dew drops (condensation) will accumulate on and inside the unit.

In case of condensation, the unit must only be put into operation after a waiting time of ca. 12 hours.



Unpacking

When unpacking the unit, please proceed as follows:

1. Do not throw the original packing away. Keep it for further transport.
2. Check whether the shipment is complete by comparing it with your order sheet.
3. Save the enclosed documents. They contain important information for handling your unit.
4. Please check the contents of the shipment for obvious transport damages.
5. In case of transport damage or discrepancies between the contents of the consignment and your order, please inform our service department.

Setting up

The industrial PC is designed only for fixed mounting in machine and plant engineering.

Please consider the prescribed environmental conditions for operation (see paragraph “**Technical data**” in chapter “**Annex**”).

Environmental conditions

When choosing a location for the unit, please consider the following:

- Please take into account the climatic and mechanical environmental requirements in paragraph “**Technical data**” in chapter “**Annex**”.
- Avoid extreme environmental conditions. Protect the unit against dust, humidity and heat.
- Protect the unit against mechanical stress such as strong vibrations and shock.
- Do not expose the unit to direct insolation.
- The device must be installed so that it does not represent a danger (e.g. by falling).

4.2 Connecting the devices

Please ensure that you observe the section “Fundamental safety measures” in the chapter “General safety instructions”!

Please follow these instructions to correctly connect up the device:

Insert the power supply cable into the power supply socket on the device and then connect it to the mains electricity network. The **optional** mains adapter supplies the device with electricity. Even when the device is not connected, the mains adapter will still be supplied with electricity. Therefore, disconnect the mains adapter from the mains electricity network when it is not connected to the device.



4.3 Disconnecting the device from the mains electricity network

To disconnect the power supply from the device (via the mains adaptor), pull the mains plug from the power socket.

If you want to disconnect the adapter from the mains, pull the connector out of the wall socket first and then out of the socket on the product. The mains adapter or the device may be damaged if this process is carried out in the reverse order.

Always take hold of the plug itself when disconnecting it from the socket. Never pull on the cable!



4.4 Connecting peripherals and other external systems

The power supply plug must be disconnected!

Before connecting the external devices, please read the respective documentation!

During thunderstorms, electric leads must be neither connected nor disconnected!

When loosening a cable, always take hold of the connector. Never tear the cable!



Connecting the cables

When connecting cables to the unit, please maintain the following chronological order:

1. Switch off all devices to be connected.
2. Disconnect all concerned devices from power.
3. Connect all cables to the unit and to the devices to be connected.
4. Plug all backbones (if existing) into the respective connectors of the data / telephone networks.
5. Reconnect all devices to the mains supply.

Checking the rated voltages and connecting

1. Check whether the rated voltage is correct, paying attention to the information given on the type label.
2. Plug the power supply plug into the power connection socket of the unit, then connect it to an electricity network.

4.5 Switching on

The unit features an **reset** push-button at the **front** of the housing.

The unit will be started after **connecting the power input**.

Initial operation and installation of the drivers

When the unit is switched on, the operating system (if ordered) is started. All necessary drivers have been pre-installed.

In case you have ordered the unit without operating system, you have to install an operating system as well as the driver software for the implemented / connected additional hardware. Please adhere to the instructions given in the documentations of the operating system and the devices, respectively.

4.6 Switching off

Before you can switch off the device, the software that is currently running must properly shut down.

Control software, as usually applied with industrial PCs, allows to give all users different authorisations. A user who is not authorised to quit the software is not allowed to switch off the unit either, since switching off the unit while the software is run may cause loss of data from the permanent storage.

If the unit is switched off while the software writes a file onto the permanent storage, this file will be destroyed. Control software usually writes onto the permanent storage at regular intervals, so the probability of causing damage by switching off while the software is run is very high.



Shut down before switching off the unit!

If the device is switched off without the operating system having been properly shut down, the device could be damaged to such an extent that it will no longer start.



4.7 Maintenance

Cleaning

Switch off the unit and all devices connected thereto, then separate the unit from current supply.

The unit may be cleaned with a moist, soft cloth. Please do not use any corrosive detergents, no dilutions, no abrasives and no hard objects which may scratch the unit.



Maintenance

There are no parts included which need maintenance.

5 Shutdown

Please always adhere to the chapters “General information” and “General safety instructions”!



5.1 Disposal

Disassembling and demounting

The unit must be completely disassembled and demounted for disposal.

Metal parts of the housing can be recycled.

Adhere to the national regulations regarding electronic waste

Electronic parts such as batteries, drives and printed circuit boards must be disposed of according to the national regulations regarding electronic waste.

6 Assistance in case of malfunction

6.1 Service

We provide full service and support, fast and qualified assistance with all questions concerning our products.

Our service department helps you with:

- repair service
- spare parts
- hotline

Contact

Telephone: +49 (0)8131 33204-130

Fax: +49 (0)8131 33204-150

E-Mail: service@tl-electronic.de

In case of questions or complaints, please state the **serial number**, which is specified on the type label.

6.2 Head office

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Please also visit our website

www.tl-electronic.de

There you will find further information regarding our products.

7 Annex

7.1 Technical data

Dimensions (w × d × h) 65,4 × 139 × 152 mm

Protection class IP20

Wireless characteristics –

Supply voltage 9–36 Volt DC

Operating conditions

Operating temperature 0 °C to 50 °C

Air humidity 5 % to 95 % non condensing

Transport and storage

Environmental temperature –20 °C to 65 °C

Air humidity 5 % to 95 % non condensing