

**Instruction Manual for
Industrial PC
*EmbeddedLine EL212x***



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**Perfect
Industrial IT** 

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1 General information

1.1 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.

It is directed only to qualified personnel skilled in control engineering or automation engineering and acquainted with the applicable standards.

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

1.2 Validity of this documentation

This documentation is valid for all available versions of the **industrial PC EmbeddedLine EL212x** and describes the delivery condition as from January 2014.

1.3 Product designations

In this documentation, instead of the product designation **"EmbeddedLine EL212x"**, the abbreviations **"industrial PC"** or **"unit"** are used as well.

The product designation **"EmbeddedLine EL212x"** includes the versions **"EmbeddedLine EL2111"** (one expansion slot) and **"EmbeddedLine EL2112"** (two expansion slots).

1.4 Component documentation

The unit may be equipped with varying components and expansions.

For information on the components please refer to the enclosed descriptions, manuals or CD-ROMs, respectively. They are to be regarded as part of this manual.

For detailed instructions for use of the provided software please refer to the respective manuals.

1.5 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 and 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 and 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.

1.6 Qualified personnel

The respective unit / system must only be set up and operated in connection 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 Terms of liability

The qualified personnel must ensure that the use or the application, respectively, of the described products 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 products 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.

1.8 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 the safety instruction, danger to machine, material and environment can therefore not be excluded.
- If an **"Attention"** warning triangle is placed beside the safety instruction, 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 Fundamental safety measures

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.

Shutdown

Before the unit is shut down, the running software must be regularly quit.

Disregarding this may cause loss of data.

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 plugs from the sockets.



Never open a power supply!

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

Disconnect supply voltage!

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

Do not exchange any parts under voltage!



Assembly work may cause damage to the unit:

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

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 lithium 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

3.1 Intended application

The industrial PC *EmbeddedLine EL212x* is a mountable PC designed only for industrial use in machine and plant engineering.

It was designed for machine-oriented, industrial applications:

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



If the unit is used for application 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
EmbeddedLine EL2121
(configuration example)



On the front of the housing, there is an on/off push-button, a reset button, control LEDs (power and HDD) and several interfaces.

On/off button



The unit can be switched on and off with the on/off push-button.

The on/off push-button does not separate the unit from the power supply system!

Rear view



Type label

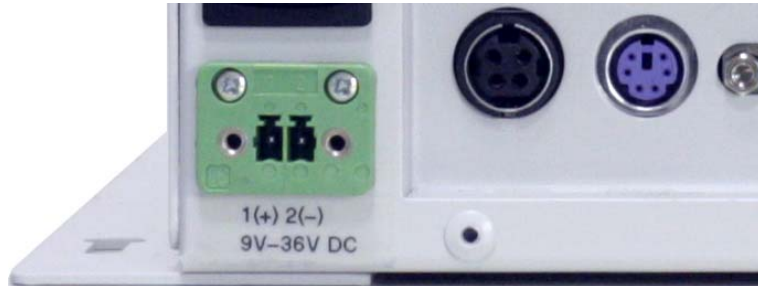
The type label is affixed to the back of the unit.

3.3 Connections

Power supply

On the front of the housing there is a 9–36 V_{DC} power inlet socket for an external power source.

*Connector description:
Power Input*



Other power input voltages are optionally.

The input voltage range is specified on the type label.

Before switching on, please check the information given on the type label.



Interfaces

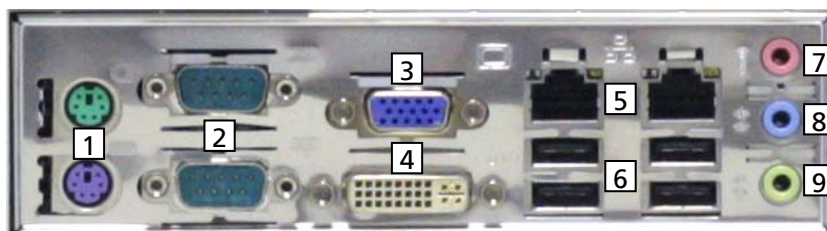


Information

Interfaces of
EmbeddedLine EL221x
(configuration example)

The unit can be provided with interfaces as shown in the following examples.

The particular interfaces depend on the specific configuration.



(1) PS/2 interfaces

The two PS/2 interfaces allow connection of a PS/2 mouse and a PS/2 keyboard.

(2) Serial interfaces

The number of serial interfaces may vary. They are addressed by the software as COM1, COM2, ... etc.

(3) VGA connector

A 15-pin SUB-D socket allows connection of a monitor with an analog VGA input.

(4) DVI connector

The Digital Visual Interface (DVI) allows simultaneous transmission of analogue and digital video data to a monitor with a DVI input.

(5) Network connection

An RJ-45 socket allows connection to a network.

(6) USB interfaces

The number of USB interfaces may vary. They allow connection of peripheral devices with USB adaptor.

Audio I/O

The sound interface has the following connecting sockets: microphone (7), line in (8) and line out (9).

4 Start-up and handling



Please also pay regard to the chapters **“General Information”** and **“General Safety Instructions”**!

4.1 Transport and installation

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

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.

Installation

The industrial PC **EmbeddedLine EL212x** is a mountable PC designed only for industrial use in machine and plant engineering.

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

Environmental conditions

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

- Please take into account the climatic and mechanical environmental requirements in chapter ***“Technical data”***.
- 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 unit must be installed in such a way, that it cannot cause any danger (e.g. by toppling down).
- Take care that the unit is protected against splash water if necessary.
- The unit must be installed in such a way, that no heat accumulation because of narrow assembly is possible. The environmental conditions in chapter ***“Technical data”*** must be kept.



If these mounting conditions are not adhered to, the prescribed safety instructions will not be complied with, either. There will be a risk of damage to persons and property!

4.2 Connecting the devices



Please unplug the power connector!

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.

4.3 Switching on and off

Switching on

The industrial PC features a frontside on/off push-button.

The industrial PC will be started after the button is turned on.

Switching off

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 industrial PC either, since switching off the industrial PC while the software is run may cause loss of data from the hard disk.



Shut down before switching off the unit!

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

Initial operation and installation of the drivers

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

In case you have ordered the industrial PC 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.

4.4 Maintenance

Cleaning



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

The industrial PC 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



The industrial PC is maintenance-free

5 Shutdown



Please always adhere to the chapters “General Information” and “General Safety Instructions”!

5.1 Disposal

*Disassembling and
dismounting*

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 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

Telephone: +49 (0)8131 33204-0

Fax: +49 (0)8131 33204-150

E-Mail: service@tl-electronic.de

Please state the serial number!

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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Bgm.-Gradl-Str. 1
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Please also visit our website

www.tl-electronic.com

There you will find further information regarding our products.

7 Annex

7.1 Technical data

| | | |
|---|---|----------------------------|
| <i>Dimensions</i> | Dimensions (W × D × H): | 210 × 220 × 117/138 mm |
| <i>Do not use the unit in explosion hazard area</i> | The industrial PC must not be used in explosion hazard area. | |
| <i>Environmental conditions during operation</i> | Operating temperature: | 0° C to 45° C |
| | Air humidity: | 10%–90% non condensing |
| <i>Transport and storage</i> | Environmental temperature: | –20° C to 65° C |
| | Air humidity: | 10%–90% non condensing |
| | Protection class: | IP20 |
| <i>Energy supply</i> | Supply voltage: | 9–36 V _{DC} ± 10% |
| | alternative: | 12 V _{DC} ± 10% |
| | Power consumption: | max. 60 Watt |
| <i>Compatibility</i> | Interference immunity: | according to DIN EN 55024 |
| | Emitted interference: | according to DIN EN 55022 |
| | Compliant with CE | |

7.2 EC Conformity Declaration

EG-Konformitätserklärung *EC Declaration of Conformity*



Wir TL Electronic GmbH
We Bgm.-Gradl-Str. 1
 D-85232 Bergkirchen - Feldgeding
 Germany

erklären in alleiniger Verantwortung, dass das Produkt:
declare under our sole responsibility, that the product:

Typ: Industrie-PC, EmbeddedLine
Model: EL2121

Optionen:
Options:

mit den Anforderungen der Normen und Richtlinien
meets the requirements of the standard and regulations of the directive

2004/108/EG Elektromagnetische Verträglichkeit (EMV)
Electromagnetic compatibility (EMC)

EN 55022:2010

Einrichtungen der Informationstechnik – Funkstöreigenschaften – Grenzwerte und Messverfahren
Information technology equipment – Radio disturbance characteristics - Limits and methods of measurement

EN 61000-3-2:2006+A1:2009+A2:2009

Elektromagnetische Verträglichkeit (EMV) - Teil 3-2: Grenzwerte für Oberschwingungsströme
Electromagnetic compatibility (EMC) - Part 3-2: Limits for harmonic current emissions

EN 61000-3-3:2008


Elektromagnetische Verträglichkeit (EMV) - Teil 3-3: Begrenzung von Spannungsänderungen, Spannungsschwankungen und Flicker
Electromagnetic compatibility (EMC) - Part 3-3: Limitation of voltage changes, voltage fluctuations and flicker

EN 55024:2010

Einrichtungen der Informationstechnik – Störfestigkeitseigenschaften – Grenzwerte und Prüfverfahren
Information technology equipment – Immunity characteristics – Limits and methods of measurement

übereinstimmt und damit den Bestimmungen entspricht.
and therefore corresponds to the regulations of the Directive.

Bergkirchen-Feldgeding, 28.11.2013
Ort und Datum der Ausstellung
Place and date of issue



Stefan Götz, Geschäftsführer
General manager

EG-Konformitätserklärung
EC Declaration of Conformity



Wir TL Electronic GmbH
We Bgm.-Gradl-Str. 1
 D-85232 Bergkirchen - Feldgeding
 Germany

erklären in alleiniger Verantwortung, dass das Produkt:
declare under our sole responsibility, that the product:

Typ: Industrie-PC, EmbeddedLine
Model: EL2122

Optionen:
Options:

mit den Anforderungen der Normen und Richtlinien
meets the requirements of the standard and regulations of the directive

2004/108/EG Elektromagnetische Verträglichkeit (EMV)
Electromagnetic compatibility (EMC)

EN 55022:2010

Einrichtungen der Informationstechnik – Funkstöreigenschaften – Grenzwerte und Messverfahren
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EN 61000-3-3:2008

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EN 55024:2010

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General manager