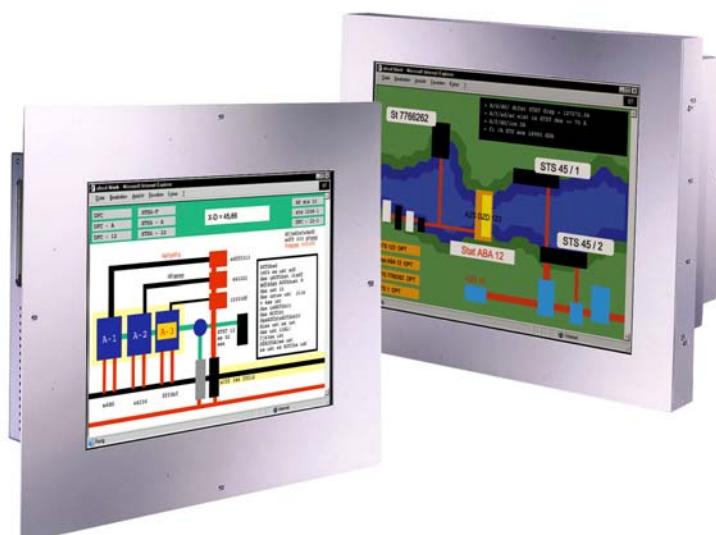


Instruction Manual for Panel PC FlexLine



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

Telephone: +49 (0)8131 33204-0

Fax: +49 (0)8131 33204-150

E-Mail: info@tl-electronic.de

www.tl-electronic.de

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

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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 **panel PC FlexLine** and describes the delivery condition as from January 2008.

1.3 Product designations

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

The product designation **"FlexLine"** includes the versions **"FlexLine 12-FL"**, **"FlexLine 15-FL"**, **"FlexLine 17-FL"** (fanless versions), **"FlexLine 12-M"**, **"FlexLine 15-M"**, **"FlexLine 17-M"** (Celeron/Pentium M versions), **"FlexLine 12-D"**, **"FlexLine 15-D"**, **"FlexLine 17-D"** (Core2Duo versions), and **"FlexLine 12-P4"**, **"FlexLine 15-P4"**, **"FlexLine 17-P4"** (Celeron/Pentium 4 versions).

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.

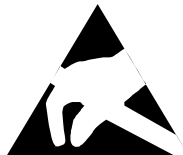


Explosion hazard and pollution!

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 panel PC *FlexLine* is designed only for frontpanel- or VESA-mounting or mounting with the included mounting brackets in machine and plant engineering.

It was designed for machine-oriented, industrial applications:

- 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.



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 designs



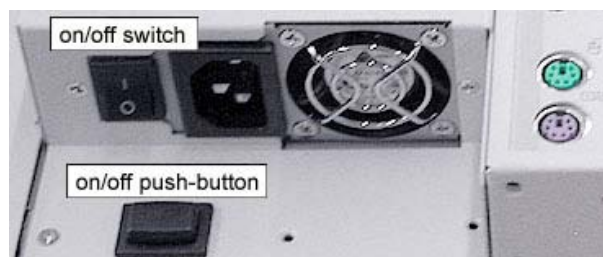
The panel PC can be equipped with different front panels, depending on the intended use.

Drives, expansion slots, interfaces and controls



Drives and expansion slots are on the side, interfaces and controls are on the rear side.

On/off switch, on/off push button



The unit can be switched on and off with the on/off push-button and with the on/off switch at the power supply unit. Optionally, the push-button may be without function. The system is then switched on and off with the power switch at the back.

The push-button does not separate the unit from power system!



*Rear view of the
FlexLine*



Type label

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

Opening the housing

For opening the housing, please remove all fastening screws from the cover of the housing with a Phillips head screwdriver. The cover can then be lifted upwards, allowing access to hard disk drive, processor, memory and expansion slots.



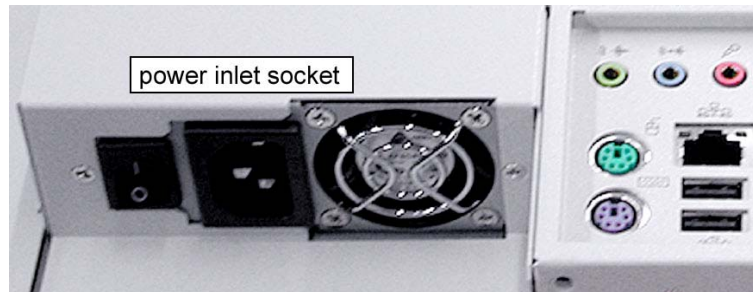
Before opening, the power supply must be disconnected!

3.3 Connections

Power supply

On the back of the housing, beside the on/off switch, there is a power inlet socket.

Connection socket on the back of the housing



Configuration of the power supply

The unit is equipped with a 90 Watt (fanless version) respectively 250 Watt standard ATX power supply.

Its input voltage range is 100 V_{AC}–240 V_{AC} at 50–60 Hz.

The voltage is automatically adjusted.

Optionally there is a DC power supply available.

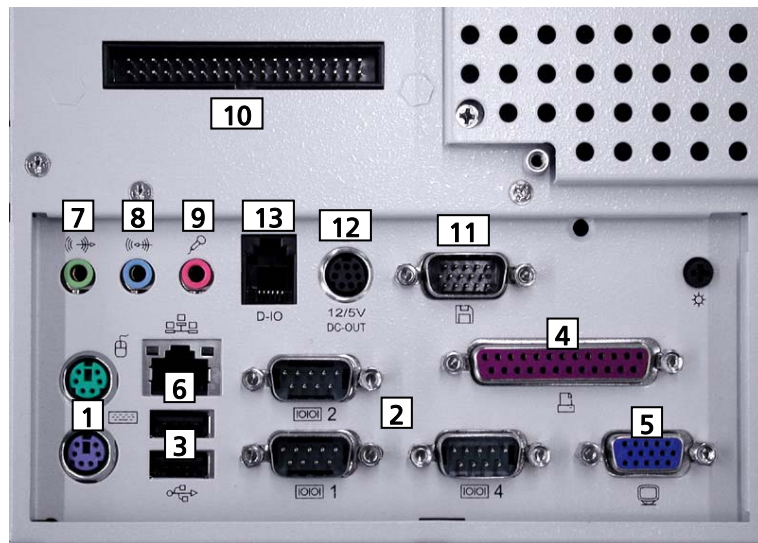
input voltage range: 24 V_{DC}

power: 150 Watt

Interfaces

The unit is equipped with following interfaces

Interfaces of the FlexLine



(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 serial interfaces COM1, COM2, and COM4 are arranged outside.

(3) USB Interfaces

There are two USB interfaces, they allow connection of peripheral devices with USB adaptor.

(4) Parallel Interface

The parallel interface complies with the Centronics standard and is addressed by the software as LPT1.

(5) VGA Connection

A 15-pole SUB-D socket allows connection of an analogue VGA monitor or an LC display.

(6) Network Connection

An RJ-45 socket allows connection to a network.

Audio I/O

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

(10) IDE external

allows connection of external drives.

(11) FDD external

allows connection of an external floppy drive.

(12) DC-out

A 5V/12V-connector allows connection of external consumer loads.

(13) DIO-Port

Digital input/output interface

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 panel PC **FlexLine** is designed only for frontpanel- or VESA-mounting or mounting with the included mounting brackets 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 panel PC features a power switch at the back of the housing as well as an on/off push-button. The panel PC will be started after both switches are turned on.



Optionally, the panel PC can be activated by turning on the power switch at the back. The function of the on/off push-button may be deactivated by a BIOS option or a hardware modification inside the unit. This option allows to start the panel PC and other connected devices simultaneously via a central power switch.

Switching off

After one of the switches is operated, the panel PC will be switched off.

Control software, as usually applied with panel 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 panel PC either, since switching off the panel PC while the software is run may cause loss of data from the hard disk.



Shut down before switching off the unit!

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

In case you have ordered the panel 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 panel PC and all devices connected thereto, then separate the panel PC from current supply.

The panel 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

When used in dust-free environment, the panel PC is maintenance-free. The air filter (except fanless units) should be occasionally checked and cleaned.

If the panel PC is operated in a highly polluted environment, the filter pad must be regularly checked for its grade of pollution (at least once per month) or cleaned, respectively, of, if necessary, replaced by a new filter pad.

Fanless units are maintenance-free.

Exchanging the filter pad

Rear view



You can access the filter pad by opening the rear side ventilation grille **(1)**.

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 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

TL Electronic GmbH
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Germany

Telephone: +49 (0)8131 33204-0

Fax: +49 (0)8131 33204-150

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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 without front panel (width x height x depth) FlexLine 12" 354 × 283 × 116,9 mm FlexLine 15" 396 × 320 × 127 mm FlexLine 17" 426 × 350 × 129,5 mm Weight: FlexLine 12" approx. 11,0 kg FlexLine 15" approx. 13,0 kg FlexLine 17" approx. 15,0 kg	
<i>Do not use the unit in explosion hazard area</i>	The panel PC must not be used in explosion hazard area.	
<i>Operating conditions</i>	Operating temperature:	0°C to 45°C 0°C to 40°C fanless versions
	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:	100–240 V _{AC} , 50–60 Hz
<i>100–240 V_{AC} power supply</i>	Power consumption:	250 W max. Fanless 90 W max.
<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

The EC Conformity Declarations can be found on the enclosed product CD inside the folder

Panel-PC FlexLine & MediaLine\EC Conformity Declarations