Leybold

TURBOVAC

TURBO.CONTROL i

24 VDC Display Unit

Brief Instructions 300680364_002_C2

Part No.
800100V0004

NOTICE

Obligation to provide information
Before installing and commissioning the device, carefully read these Instructions and follow the information so as to ensure optimum and safe working right from the start.

The Leybold **Display Unit** has been designed for safe and efficient operation when used properly and in accordance with these Operating Instructions. It is the responsibility of the user to carefully read and strictly observe all safety precautions described in this section and throughout the Operating Instructions. The pump system must only be operated in the proper condition and under the conditions described in the Operating Instructions. It must be operated and maintained by trained personnel only. Consult local, state, and national agencies regarding specific requirements and regulations. Address any further safety, operation and/or maintenance questions to our nearest office.

“Trained personnel” for the operation of this pump are

- skilled workers with knowledge in the fields of mechanics, electrical engineering and vacuum technology, and
- personnel specially trained for the operation of vacuum pumps.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE is used to notify users of installation, operation, programming or maintenance information that is important, but not hazard related.

We reserve the right to alter the design or any data given in these Operating Instructions. The illustrations are not binding.

Retain the Operating Instructions for further use.

These Operating Instructions are a translation of the original German instructions 300680364_001_C1.

0 Important Safety Information

0.1 Electrical hazards

WARNING

1 The electrical connection must only be provided by a trained person. Please observe the national regulations in the country of use like EN 50110-1 for Europe, for example.

2 Lethal voltages are present at the mains connections. Before starting with any maintenance and service work, de-energise (lockout/tagout) the product first.

3 Unauthorized device conversion and modifications are prohibited for safety reasons.

4 Lay connecting lines so that they cannot be damaged. Protect the lines against humidity and contact with water. Avoid any heat stress on the line due to unfavourable laying conditions.

5 Suitably support the connecting lines so that the pumps are not exposed to any major mechanical stress.

6 Do not expose the display unit and the connections to dripping water. Note the information on the IP type of protection.

7 When storing the display unit and connecting lines in a humid atmosphere, these can suffer corrosion. Corrosion gives rise to conductive deposits which in turn can cause short-circuits and reduce the insulation levels of electrical components

8 Transport the display unit and connecting cables only in their original packaging so as to avoid any mechanical damage which in turn may reduce air gaps and creepage distances.

9 Make the electrical connections only after pump and accessories (e.g. air cooler) have been installed mechanically.

Description

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The TURBO.CONTROL i serves to control and monitor a TURBOVAC i/iX and TURBO.DRIVE TD 400 controlled TURBOVAC SL 80 turbomolecular pumps.

Only one pump can be controlled and monitored.

The 24 VDC voltage supply can be provided by a plug power supply with round plug. The power supply unit is available as an accessory.

The TURBO.CONTROL i has two communication channels (RS 485 & USB) to the pump control and provides the possibility of attaching two measuring gauges. Connect a remote computer via the integrated Ethernet port to the web server of the TURBO.CONTROL i. Then use the installed internet browser to control and monitor the pump. The recorded data can be displayed and evaluated by means of the external Tool DataViewer.

The TURBO.CONTROL i contains a battery (button cell) for data buffering.

The TURBO.CONTROL i can be installed in a rack or be mounted in a table housing provided for it. The table housing is available as an accessory.

The following measuring gauges can be attached:
PTR 90, PTR 90N, TTR 91, TTR 91N, TTR101, TTR 101N.

Technical Data

Mains input	24 VDC – 1,5 A – 36 W
Dimensions	106 x 128,5 x 33 mm
Ambient temperature operation storage	 0 ...+45 °C -20 ...+45 °C
Permissible air humidity	< 60% rH, non-condensing
Protection type	IP20
Protection class	III
Weight	320 g

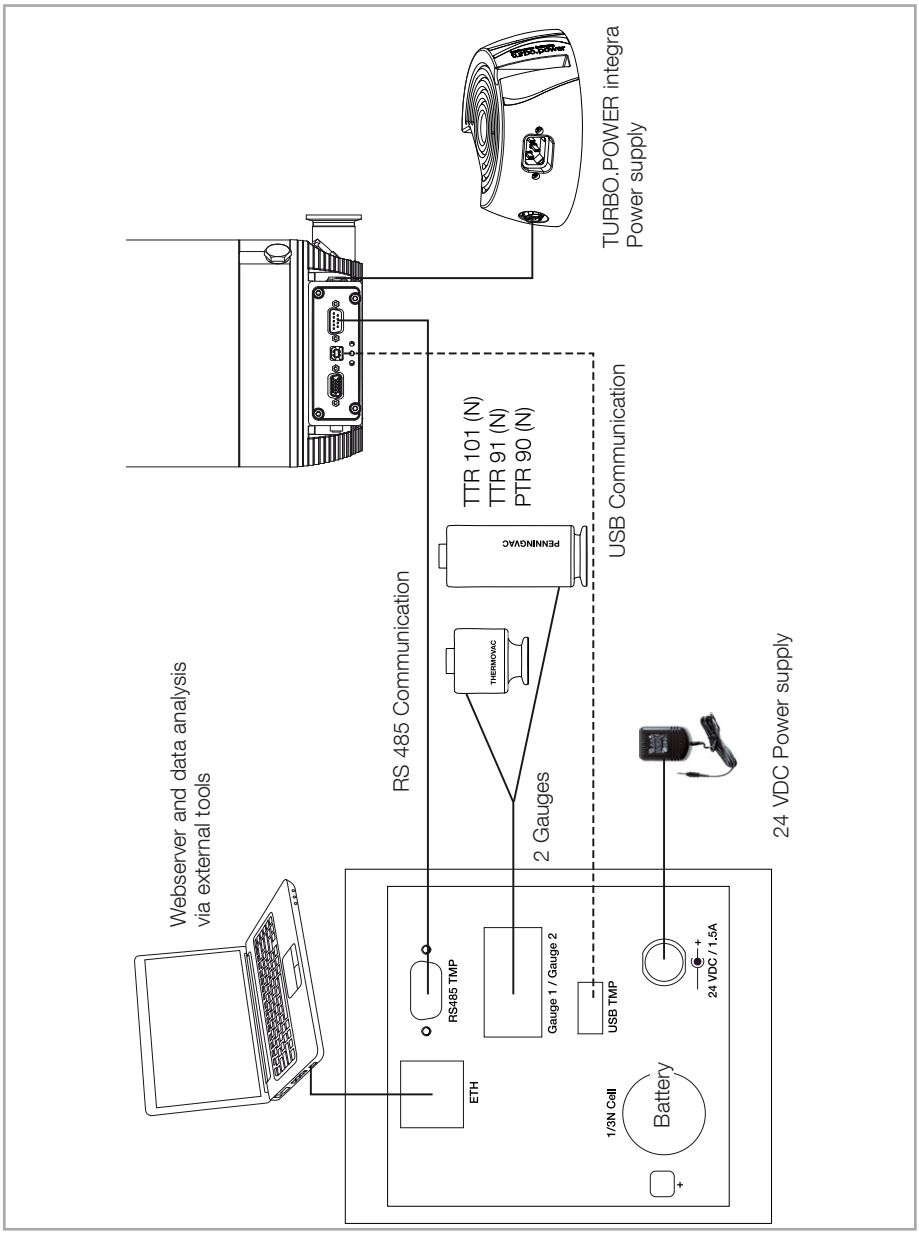

Fig. 1 Basic layout

Description

Interfaces

24 VDC / 1,5 A	Power supply Operate the device with functional extra low voltage with positive isolation (PELV). Use tested power supply.
RS485 TMP	RS485 - Communication to the turbo pump (start/stop, parameter read/write) Max. cable length 30 m
USB TMP	USB - Communication to the turbo pump (start/stop, parameter read/write) Max. cable length 5 m
ETH	Connect a computer to the RJ-45 COM interface and use the web server interface. (Software updating, data logging etc.). Max. cable length 30 m
Gauge 1 / Gauge 2	At the TURBO.CONTROL i two vacuum gauge heads can be connected. For this, two of the following types can be used: PTR 90, PTR 90N, TTR 91, TTR 91N, TTR101, TTR 101N. Max. cable length 30 m
1/3N Cell	Buffer battery - 3V button cell (for real-time clock and data logging).

Accessories

Mains adapter	800110V0027
Table housing	800110V0028
USB cable 2.0 type A/B, 1.8 m	800110V0108
RS485 cable 5 m	800103V0029 *
RS485 cable 1 m	800103V0027 *

* For TURBOVAC i pumps **only**.
This cable does **not** support the RS485 module's TURBOVAC iX assignment.

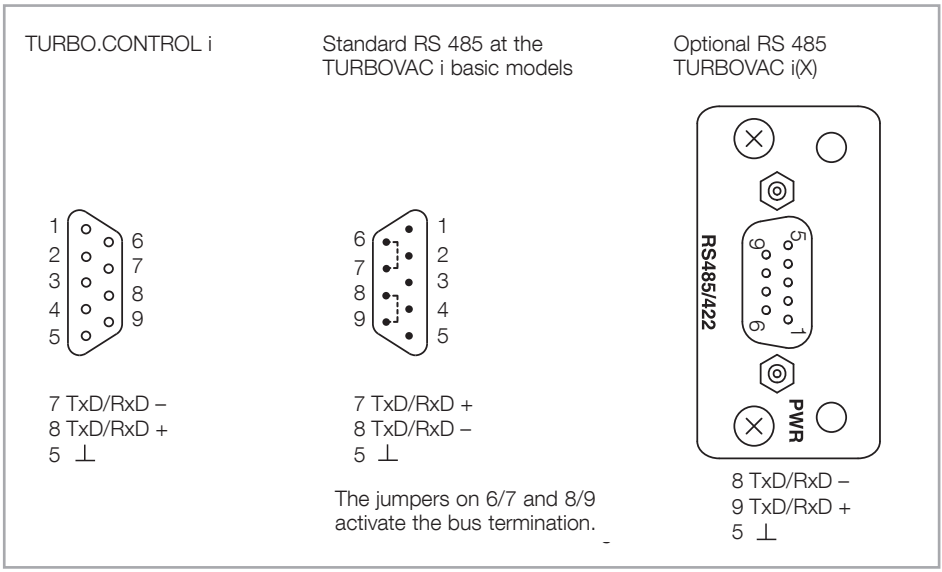

Fig. 2 Pin assignment RS 485

Conforming Use

The TURBO.CONTROL i is intended for operating the following turbomolecular pumps:

TURBOVAC SL 80, which are controlled by the TURBO.DRIVE TD 400, and TURBOVAC i/iX.

Connecting other pumps may lead to pump malfunction.

Operation

Switching On

The display starts by applying the 24 VDC supply voltage. The communication between TURBO.CONTROL i and a turbo molecular pump can be established via RS485 or USB.

TURBO.CONTROL i automatically detects the pump and loads the appropriate setting. This process may take a few seconds.

You can find a description of the software functions on the Leybold homepage under Downloads -> Download Software.

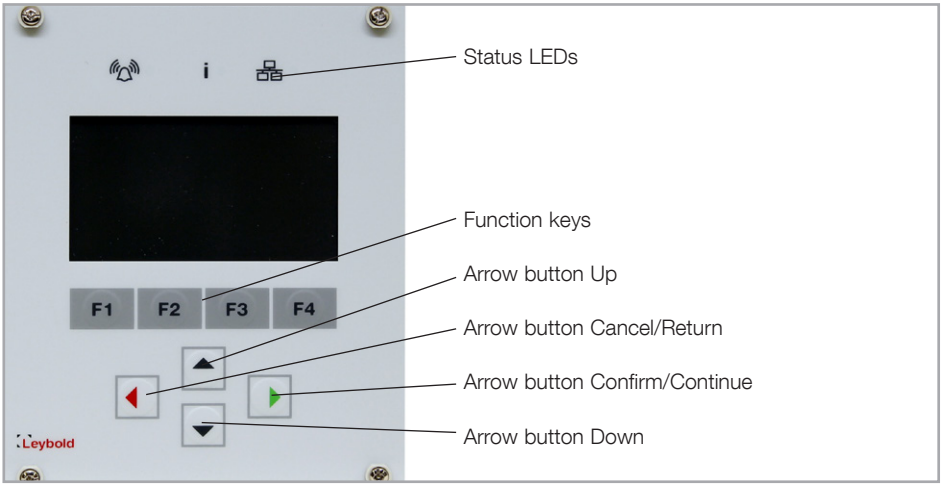

Fig. 3 Front side

LED	Symbol	LED Status	Display	Meaning
Red		Off		No System Error
		Flashing		System Warning TURBO.CONTROL i runs up
		Steady		System Error
		Steady		Turbo Pump lost communication
Green		Off		Pump not turning / no start command active
		Flashing 50 ms on, 500 ms off		Start delay > 0 (P36)
		Flashing slowly 1/s		Running up
		Flashing fast 3/s		Running down
		Steady		Normal Operation
White		Steady		Ethernet Communication Active

Fig. 4 Monitoring of the operation conditions

Operation

- The meanings of the function keys F1 - F4 are shown in the lowest line of the display.
- A modified value or setting becomes active by confirming with green. If aborted with red, the old value remains valid.
- If the value is again saved by confirming, it remains after a power reset. **All the values** previously changed are saved by confirming the query.
- The saving procedure may take a few seconds. The pump must not be separated from the supply voltage during the saving procedure.

Service

Cleaning
Remove dust on the surfaces using a moist piece of cloth only to prevent the creation of any sparks.

Changing the Battery
When the battery is missing or empty, no real time clock can be saved in the Data Logging. The function of the the TURBO.CONTROL i is not affected.

Disconnect the device from voltage. Remove the rubber cover on the rear side to replace the battery

Use only the intended battery type CR1/3N.

We recommend a changing interval of 7 years.

Leybold Service
Whenever you send us in equipment, indicate whether the equipment is contaminated or is free of substances which could pose a health hazard. If it is contaminated, specify exactly which substances are involved. You must use the form we have prepared for this purpose.
www.leybold.com → Downloads → Download Documents.

Attach the form to each device.

This statement detailing the type of contamination is required to satisfy legal requirements and for the protection of our employees.

We must return to the sender any equipment which is not accompanied by a contamination statement.

Waste Disposal

The equipment may have been contaminated by the process or by environmental influences. In this case the equipment must be decontaminated in accordance with the relevant regulations. We offer this service at fixed prices. Further details are available on request.

WARNING

Contaminated parts can be detrimental to health and environment.
Before beginning with any work, first find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Separate clean components according to their materials, and dispose of these accordingly. We offer this service. Further details are available on request.

When sending us any equipment, observe the regulations given in Section “Leybold Service”.

EU Declaration of Conformity

(Translation of original Declaration of Conformity)

The manufacturer:	Leybold GmbH Bonner Strasse 498 D-50968 Köln Germany

herewith declares that the products specified and listed below which we have placed on the market, comply with the applicable EU Directives. This declaration becomes invalid if modifications are made to the product without agreement of Leybold GmbH.

Product designation:	Display
Type designation:	TURBO.CONTROL i
Part numbers:	800100V0004

The products comply with the following Directives:

Low Voltage Directive (2014/35/EU)

Electromagnetic Compatibility (2014/30/EU)

RoHS Directive (2011/65/EU)

The following harmonized standards have been applied:

EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements Emissions: Group 1, Class A Immunity: Industrial electromagnetic environment
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Documentation officer:

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