

Installation and commissioning instructions

TK-313

Important safety notes, make sure to follow

The prerequisites for a perfect and safe operation of the evaluation instruments are proper transport, storage and mounting, professional installation and startup, operation as intended and careful maintenance.

These tasks may be performed only by persons possessing the respective necessary technical knowledge and qualifications. The valid European and national regulations for installation of electrical equipment must be observed.

During installation or maintenance always switch the power off. The device should be operated only under the conditions defined in the technical data.

In the event that information contained in these instructions should prove to be insufficient in any way, please contact the manufacturer.

1. Technical data

Supply voltage	24... 230 V AC/DC
Power consumption	Approx. 2 VA, 2 W
Ambient temperature	-20°C ... +60°C
Protective system	Terminal: IP 20; housing: IP 40 according to EN 60 529
Probe supply voltage	10 V DC, max. 2 mA
Input	0/2... 10 V DC, 0/4... 20 mA
Outputs	2 change over switch, analogue 4... 20 mA
Contact load of output relays	Max. 250 V AC / 115 V DC; max. 500 VA; 3 A
Operating elements	Three-way button on front panel with software protection against accidental operation.
Display elements on front panel	2-digit, 7-segment LED (display: 0 .. 99%, oo = 100%), 5 LEDs for operation, K1, K2 adjust to 4 mA and adjust to 20 mA
Connection	Plug-in screw-type terminals
CE-sign	Low-voltage directive (2014/35/EU) / EMV-Directive (2014/30/EU)

2. Description of function

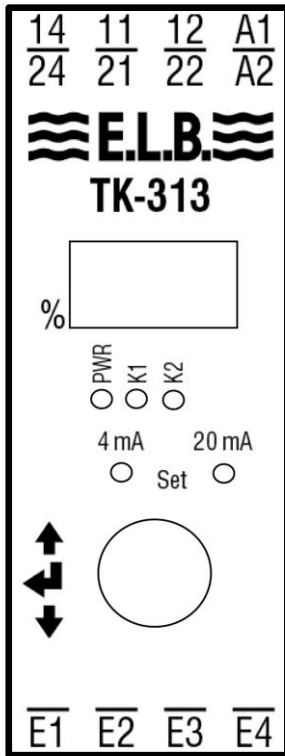
- Input circuit configurable for U, I or rheostatic teletransmitter (TK probes)
- Universal power pack for the supply voltages from 24V ... 230V AC/DC
- One button operation with 3-way button
- Measured value display, 2-digit, 7-segment LED; resolution 1% of range of indication
- The switching points of the relays are set with the 3-way button in % of the measuring range and are shown in the display during the setting operation.
- The relay switching points are set one after the other in a setting sequence
- The current output (4... 20 mA) can also be calibrated with the setting button, burden max. 500 Ohm.
- **Please note:** Output 4... 20 mA = Display 20... 100% (4 mA = 20%).

Maintenance / cleaning

When used properly according to the intended purpose the device operates maintenance-free. Cleaning is carried out only with a damp cloth – no detergents or solvents should be used.

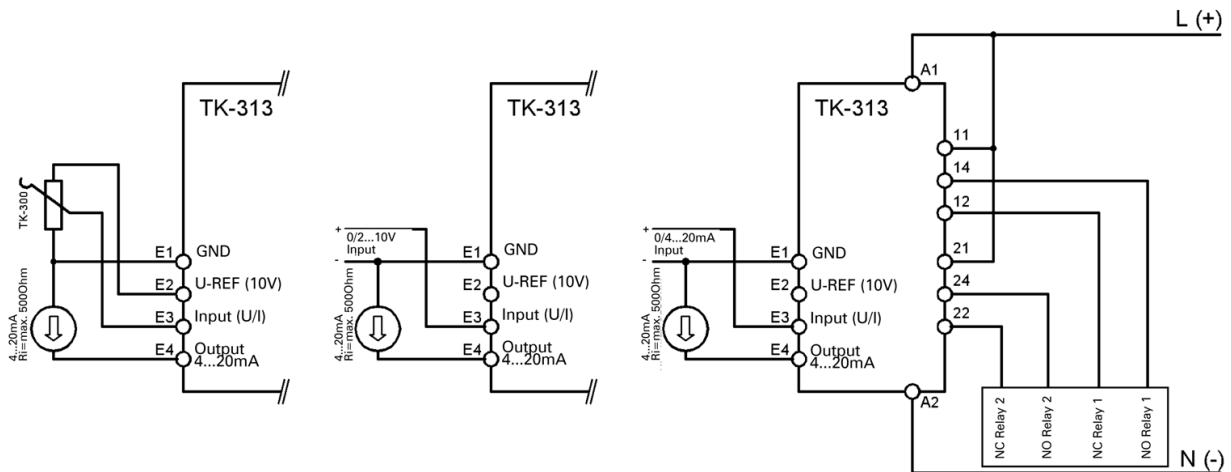
3. Installation and putting into operation

- Mount the measuring transducer in the switch box or switch cabinet on 35 mm C-rails and connect the power supply, relay outputs and sensors as shown in the terminal connection diagram – see below.
- Connect the measuring transducer correctly to the voltage supply. For permissible supply voltage see type plate.
- Switch on the supply voltage.
- Set the switching points: Keep the 3-way button (acknowledge) pressed until LED K1 flashes. The setting value for the switching point of relay 1 appears in the display. This switching point can now be increased by pressing the 3-way button upwards, or reduced by pressing downwards. The correctly set value is acknowledged by pressing the button vertically (in the centre). LED-K2 now flashes in the display. The value for relay 2 is now set as described above. Proceed as described above for relays 3 and 4.
- To set the analogue output a measuring device is looped into the current loop.
- To set the 4 mA value the 3-way button is kept pressed (downwards) until the 4 mA LED flashes. The minimum measuring value is set on the sensor (e.g. empty tank). The output signal is set to 4 mA with the button upwards or downwards . The correctly set value is acknowledged by pressing the button vertically (in the centre).
- To set the 20 mA value the 3-way button (upwards) is kept pressed until the 20 mA LED flashes. The maximum measuring value is set on the sensor (e.g. fill tank). The output signal is set to 20 mA with the button upwards or downwards. The correctly set value is acknowledged by pressing the button vertically (in the centre). The setting process is now complete and can be repeated at any time.
- The settings are stored fail-safe in the controller.
- **The measuring transducer is now set ready for operation.**



NO contact relay 1	14
COM relay 1	11
NC contact relay 1	12
Power supply (L, +)	A1
NO contact relay 2	24
COM relay 2	21
NC contact relay 2	22
Power supply (N, -)	A2
Ground (GND)	E1
Sensor supply 10 V DC	E2
Analogue input	E3
Analogue output	E4
▲ Increase value (increase, upwards)	
◀ Store value (acknowledge, centre)	
▼ Reduce value (reduce, downwards)	

4. Connection examples



5. Dimensions (W x D x H)

TK-313-B...: 22,5 x 114,5 x 99 mm

TK-313-C...: 22,5 x 114,5 x 112 mm