EN



ITP15

LED Bargraph Indicator

User guide

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CE

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1 Overview

ITP15 is a universally applicable process indicator. It is designed for visualizing percentage reading of process parameter and can be used with various standard DC current or voltage signals. The device requires 24V DC auxiliary voltage.

2 Technical data

Table 2.1 Technical data

Parameter	Value
Power supply	24 (10…30) V DC
Power consumption, max.	1 W
Input	**1**
Input signal	0-20 mA, 4-20 mA, 0-10 V, 2-10 V
Sampling time	0.3 s
Accuracy	± 2% FS
Input resistance	
0-20 mA, 4-20 mA	≤ 115 ohm
0-10 V, 2-10 V	≥ 250 kohm
Output	1
Type	NPN transistor
Loading capacity	200 mA, 42 V DC
Display	**LED, 10 segments, 2 colors (red/green)**
Display hysteresis	1%
Display events	signal < 0% signal = 0% 0% < signal < 100% signal = 100% signal > 100% fault
Enclosure	**for panel mounting, horizontal or vertical**
Dimensions	48 x 26 x 65 mm
Weight, max	approx. 30 g

2.1 Galvanic isolation

The ITP15 has three potential groups:

- Power supply 24 V DC
- Analog input
- Digital output

Galvanic isolation from each group to enclosure	500 V
Galvanic isolation between groups	500 V

2.2 Environmental conditions

The device is designed for natural convection cooling. It should be taken into account when choosing the installation site.
The following environment conditions must be observed:

- clean, dry and controlled environment, low dust level
- closed non-hazardous areas, free of corrosive or flammable gases

Table 2.3 Environmental conditions

Conditions	Permissible range
Ambient temperature	-40…+60 °C
Storage temperature	-25…+55 °C
IP Code	front IP65, rear IP20
Protection class	III
Relative humidity	up to 80% (at +35°C, non-condensing)

3 Intended use

The device may only be used in the manner described in this user guide, properly installed and in accordance with the specification. Damages caused by disregarding the instructions of this manual are without liability. Non-observance of the safety guidelines may result in damage to the device and injury to personal.

Improper use

Any other use is considered improper. Especially to note:

- The device may not be used for medical devices that sustain, monitor or otherwise affect human life or health.
- The device may not be used if the environmental conditions (temperature, humidity etc.) are not within the limits indicated in the specification.
- The device may not be used in potentially explosive environment or in an atmosphere with chemically active substances.

4 Functions

- Displays process value
- Displays signal overrange
- Adjustable alarm limits
- Configurable output signal
- Displays error when sensor break or short circuit.

5 Installation

⚠ CAUTION

Improper installation can cause serious or minor injuries and damage the device. Installation must be performed only by fully qualified personnel.

The device is designed for horizontal or vertical panel mounting in a borehole of Ø22.5 mm (see Appendix A for dimensional drawings).

Carefully position the supplied gasket on the display rear surface. Insert the cylindrical body of the device into the borehole and tighten the nut from the rear side of the panel.

5.1 Wiring

⚠ CAUTION

Switch on the power supply only after the wiring of the device has been completely performed

▶ NOTICE

Switch off the device before checking the sensor and connection lines. For circuit integrity check use only the measuring device with the output voltage max. 4.5 V to prevent the device damage. Disconnect the sensor in case of higher voltage.

▶ NOTICE

Signal cables should be routed separately or screened from the supply cables. Only a shielded cable may be used for signal lines.

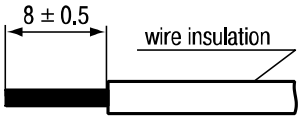


Fig. 5.1 Wire preparation

Do not use wire end ferrules to connect stranded wires.

To connect fine-stranded wire, tin the wire end.

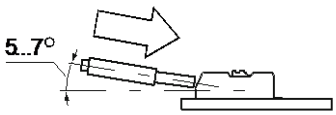


Fig. 5.2 Connecting the wire to the terminal

To connect solid wire, push the wire into the terminal.

To connect stranded wire, press the release lever and push the wire into the terminal.

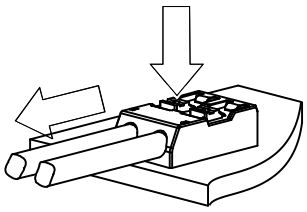


Fig. 5.3 Disconnecting the wire

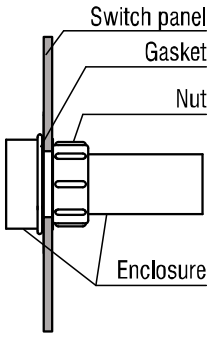


Fig. 5.4 Mounting

Press the release lever to free the wire.

– The electrical connections are shown in *Fig. 5.5-5.6* and the terminal assignments in Table 5.1.
– Connect the power supply to the terminals 24V+ / 24V-.
– Ensure that the device is provided with its own power supply line and electric fuse I = 0.5 A.
– The maximum conductor cross-section is 1 mm². Wires should be stripped for approx. 8-10 mm.

5.1.1 Input

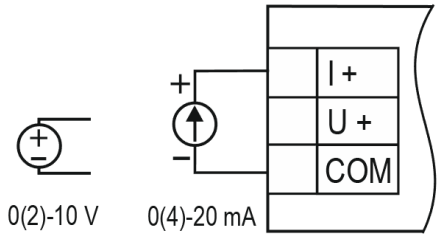


Fig. 5.5 Input wiring

Table 5.1 Terminal assignment

Designation	Description
24VDC -	Power supply
24VDC +	
DO-	Output -
DO+	Output +
COM	Common -
U+	Voltage input +
I+	Current input +

5.1.2 Output

The NPN transistor output is designed to control the low voltage relay up to 42 V DC / 200 mA

NOTICE

As a precaution against inadvertent current reversal on output, a parallel diode (U_{VD} ≥ 1.3U, I_{VD} ≥ 1.3I) is usually included in the output circuit.

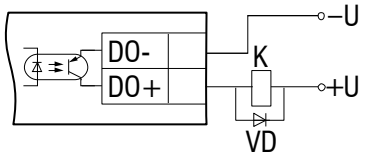


Fig. 5.6 NPN transistor output

6 Configuration

Each of the 10 display segments can be in one of the following states:

- off
- green light
- red light
- fast flashing (red/green)
- slow flashing (red/green)

The display is shown in diagrams in a horizontal position. The following symbols are used:

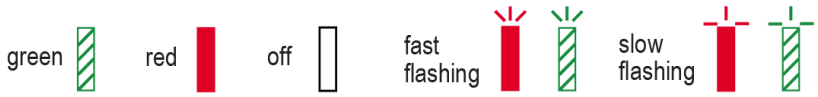


Fig. 6.1 Diagram symbols

The display segments light green or red depending on the input signal value and the set alarm limits (sect. 6.1.). The NPN output can be switched on/off using the same alarm limits (Table 6.2, parameter 2).

The indicator can be configured with 3 function buttons on the rear part of the device (Table 6.1).

Table 6.1 Function buttons

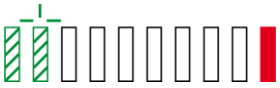
Button	Description
PROG	Press > 3 s: – start alarm limits adjustment Press < 1 s: – save the parameter and go to the next one
⩓	Increase value
⩔	Press > 3 s: – start configuration Press < 1 s: – decrease value

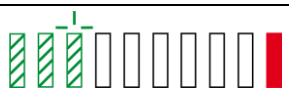
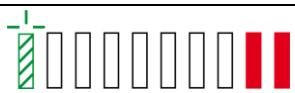
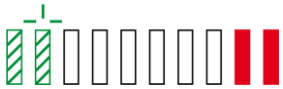
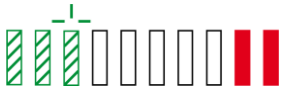
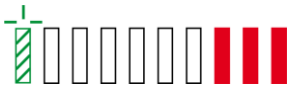
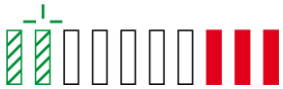
Press the ⩔ button for 3 seconds to enter the configuration mode. The first parameter will be shown on the display as follows:

- The number of red segments on the right side of the display is the parameter number. Press the button PROG to save the parameter and go to the next one.
- The number of green segments on the left side of the display is the parameter value x10%. Use the buttons ⩓ and ⩔ to change the parameter value. The slow flashing segment is the one being currently changed.

All parameters and its values are explained in Table 6.2. Default values are highlighted in bold.

Table 6.2 Configuration parameters

No.	Name	Value	Display
1	Signal type	**4-20 mA**	
		0-20 mA	

		0-10 V	
		2-10 V	
2	Output control (*Fig. 6.2*)	Off	
		On within limits	
		On outside limits	
3	Output safe state	**On**	
		Off	
4	Flashing	**Off**	
		On	

6.1 Alarm limits

The alarm limits are the signal levels at which the segment color changes and the output switches on or off depending on the value of the parameter 2. "Output control" (Table 6.2).

To set up the upper (HL) and lower (LL) limits, press and hold the button PROG for 3 seconds and then proceed in accordance with *Fig. 6*.3.

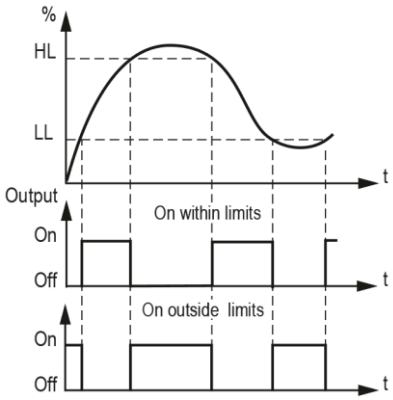


Fig. 6.2 Output control

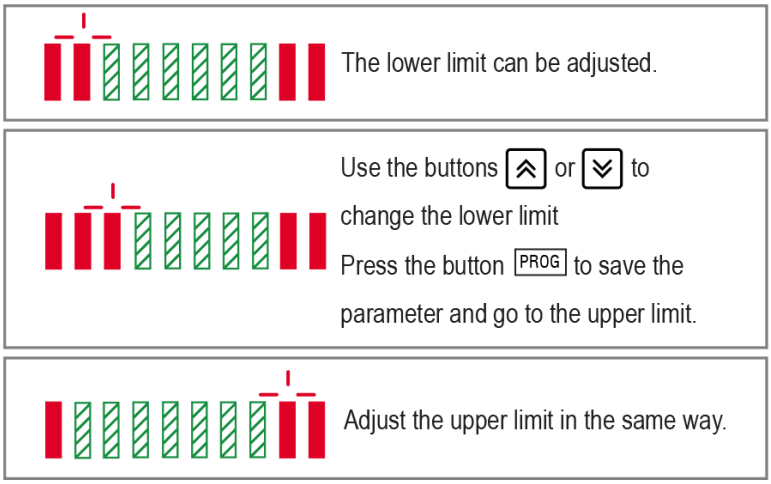


Fig. 6.3 Alarm limits adjustment

To set LL to 0% and HL to 100%, set the first and the last segments to “fast flashing red” using the buttons and , then press PROG to save and quit (*Fig. 6.4* a, b).

If you need only one limit (lower or upper), press and hold the button PROG for 3 seconds, set the first or the last segment to “slow flashing green” using the button or , and press PROG to save and quit (*Fig. 6.4* b, c).

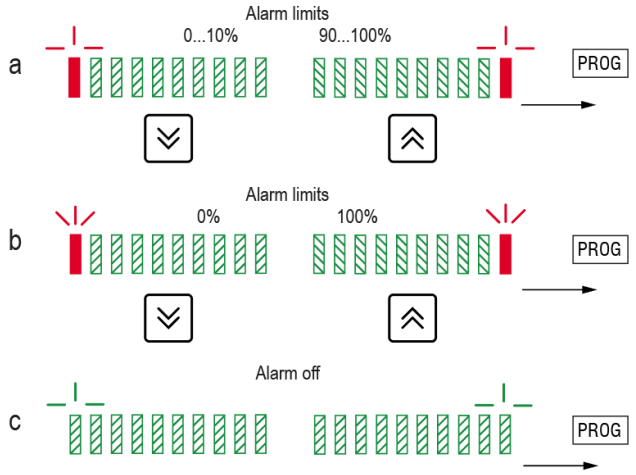


Fig. 6.4 Setting the alarm at the limit values

7. Operation

When the input signal is connected and the supply voltage is turned on, the display shows the process value as shown in *Fig. 7.1.*

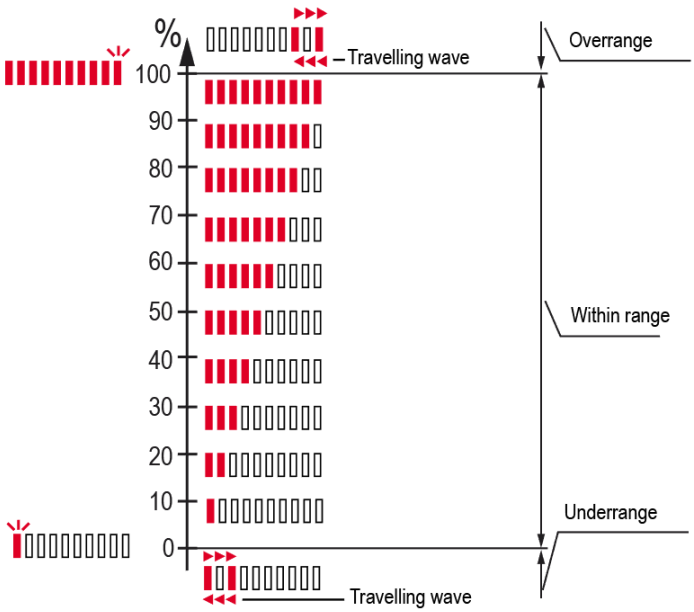


Fig. 7.1 Operation display

Each segment corresponds to 10% of the measurement range.

In case of a fault in the 4-20 mA and 2-10 V input circuit (short circuit or sensor break), the three right and left extreme segments flash in red (Fig. 7.2) and the output is set to the state defined in the parameter 3. “Output safe state” (Table 6.2).



Fig. 7.2 Fault indication

For signals 0-20 mA and 0-10 V, short circuit and sensor break are indicated as 0%. The output will not be set to the safe condition.

If the indication does not correspond to the real process value or when indicating an error, check the set signal type matches the real signal (Table 6.2, parameter 1).

8. Maintenance

The device is maintenance free.

If necessary, the device should be cleaned with a damp cloth only. No abrasives or solvent-containing cleaners may be used.

9. Transportation and storage

Pack the device in such a way as to protect it reliably against impact for storage and transportation. The original packaging provides optimum protection.

If the device is not taken immediately after delivery into operation, it must be carefully stored at a protected location. The device should not be stored in an atmosphere with chemically active substances.

Permitted storage temperature: -25…+55 °C

NOTICE

The device may have been damaged during transportation.
Check the device for transport damage and completeness!
Report the transport damage immediately to the shipper and akYtec GmbH!

10. Scope of delivery

–	ITP15	1
–	Gasket	1
–	Mounting nut	1
–	User guide	1

Appendix A. Dimensions

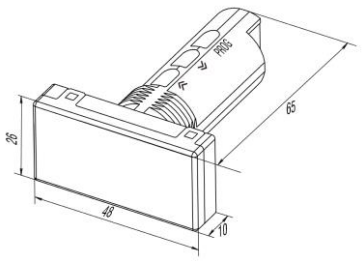


Fig. A1

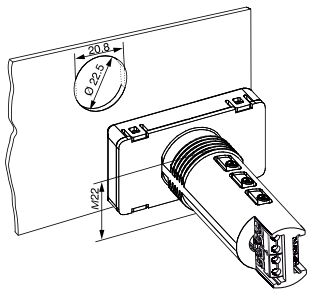


Fig. A2

To prevent the device spinning, the borehole in the front panel must correspond to the dimensions in Fig. A2.