EN



ITP11(M04)

Process indicator 4-20 mA

User guide

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1 Overview

The ITP11 is a universally applicable current loop process indicator. It can be connected to any transmitter with 4-20 mA output. The device requires no auxiliary power and is supplied directly from the current loop.

The device is designed for control and monitoring of industrial processes.

2 Specifications

ITP11 can be ordered in two versions. They differ in the display color. Ordering key:

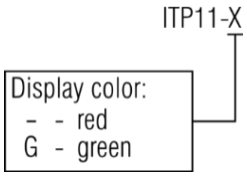


Table 2.1 Technical data

Supply current	from current loop
Input signal	4-20 mA (2-wire)
Inputs	1
Measuring range	3.8…22.5 mA
Normal operation	3.2…25 mA
Voltage drop, max.	4 V
Input resistance *	200…1000 ohm
Accuracy	0.2% + 1 digit
Display	LED, 7-segment display
Character height	14 mm
Display colour	red or green
Number of digits in display	4
Sampling time	1 s
Dimensions	48 x 26 x 65 mm
Weight	approx. 30 g

NOTICE

Before connecting the active output of another device to the ITP11 input, ensure that the output voltage is sufficient for correct operation of the ITP11 (> 4 V).

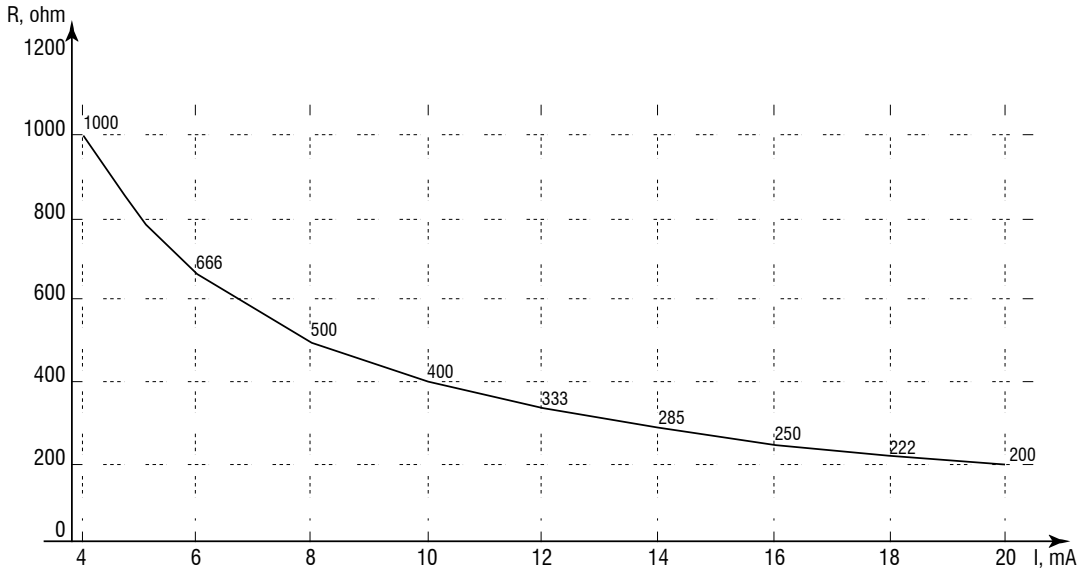


*Fig. 2.1 Input resistance **

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2.1 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 2.2

Conditions	Permissible range
Ambient temperature	-40…+80 °C
Storage temperature	-25…+80 °C
IP Code	front IP65, rear IP20
Protection class	III
Relative humidity	up to 80% (non-condensing)
Altitude	up to 2000 m above sea level

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 ITP11 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

A 4-digit LED display with 14 mm character height is located on the front of the device to display the process value or error messages in operation (see 6) and programming parameters in programming mode (see 7). The function buttons are positioned on the rear part of the device.

The device has the following functions:

- Measuring and displaying of the process value, received from a process control device with 4-20 mA output
- Signal scaling
- Adjustable decimal point position
- Display range of -999…+9999
- Square root function (for special transmitters)
- Digital filter
- Alarm function
- Error indication when exceeding the measuring limits
- Access protection

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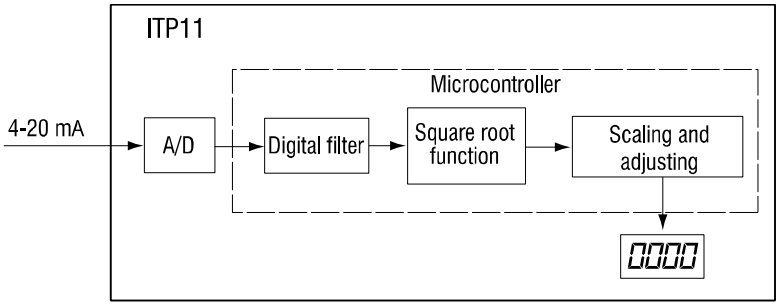


Fig. 4.1 Block diagram

5 Installation

The device is designed for 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.

Connect the device to the signal cable in accordance with Fig. 5.2-5.4.

The device factory settings can be changed before assembly if necessary. For this purpose the display must be connected to a standard signal 4-20 mA.

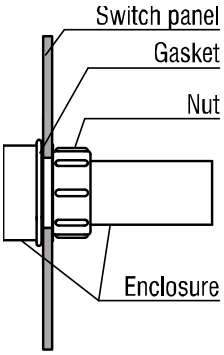


Fig. 5.1 Mounting

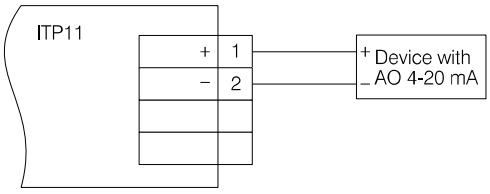


Fig. 5.2 Connection to the device with active output 4-20mA

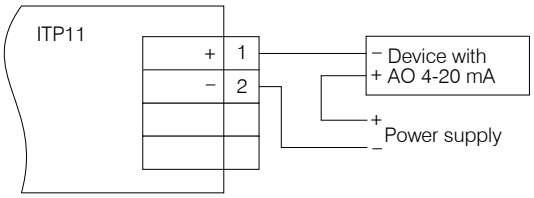


Fig. 5.3 Connection to the device with passive output 4-20mA

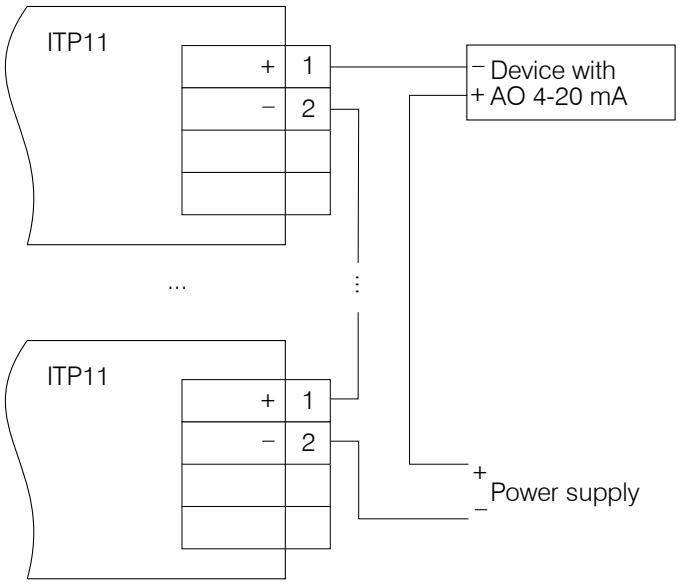


Fig. 5.4 Connection of 2 or more ITP11 to the one source of 4-20 mA

6 Operation

The operating mode is automatically activated if the standard signal 4-20 mA is connected to the terminals.

The input signal is digitalised, the square root calculated (if the function is enabled), the result scaled and displayed. The scale factor is calculated based on the parameter **di.Lo** “Lower measuring limit” (for input signal 4 mA) and **di.Hi** “Upper measuring limit” (for input signal 20 mA).

If the input signal is lower than 3.8 mA, the error message **Lo** is displayed.

If the input signal is higher than 22.5 mA, the error message **Hi** is displayed.

Filter

Undesirable signal fluctuations can be suppressed through the adjustable filter in the parameter **td** “Filter time constant” (see Fig. 6.1, Table 7.1).

The filter time constant can be set within the range 0…10 seconds. The higher the value, the slower the display reaction to changes of the input signal and the lower the susceptibility to interference. The filter is deactivated if **td** = 0.

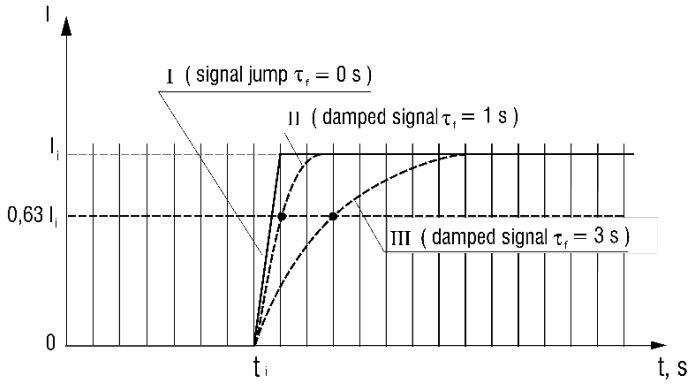


Fig. 6.1

Square root function

This function is intended for transmitters with the square characteristic. To enable the function, the parameter **Sqrt** must be set to ON.

Alarm

The alarm function compares the input signal with the setpoint limits and makes the display blink with frequency about 2 Hz, depending on the parameter **d.FnC** (see Fig. 6.2, Table 7.1)

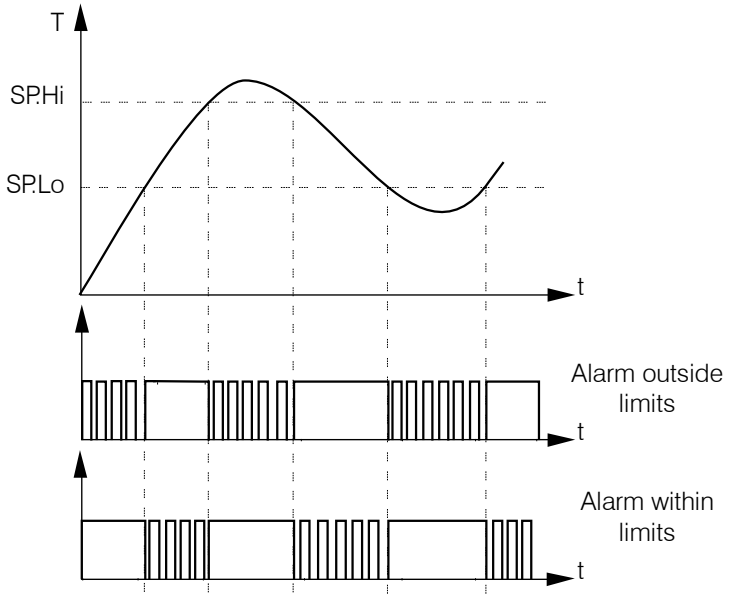


Fig 6.2 Alarm function

7 Programming

Use the button PROG to enter the programming mode or to apply the changes.

Use the buttons ⩓ and ⩔ to select or change the parameter. Press and hold the button to activate the ramp function while changing parameter.

To return to the operating mode, the PROG button must be pressed for longer than 5 s.

If no button is pressed within 20 s, the device reverts to operating mode automatically.

The parameter list is presented in Table 7.1 and the flowchart in Fig. 7.1.

Table 7.1

Name	Display	Parameter	Valid value	Description	Default
PS	PS	Access protection	ON OFF		OFF
di.P	dc.P	Decimal point	---- ---.- --.— -.---	0000 000.0 00.00 0.000	--.--
di.Lo	dc.Lo	Lower measuring limit	-999...9999	affected by **di.P**	4.00
di.Hi	dc.Hc	Upper measuring limit	-999...9999	affected by **di.P**	20.00
td	td	Filter time constant	0…10 s		0
SQrt	Sqrt	Square root function	ON OFF		OFF

Name	Display	Parameter	Valid value	Description	Default
d.FnC	d.FnC	Alarm function	oFF	OFF	OFF
			U	Alarm outside limits	
			Π	Alarm within limits	
SP.Lo	SP.Lo	Lower setpoint limit	-999...9999	affected by **di.P**	4.00
SP.Hi	SP.HC	Upper setpoint limit	-999...9999	affected by **di.P**	20.00

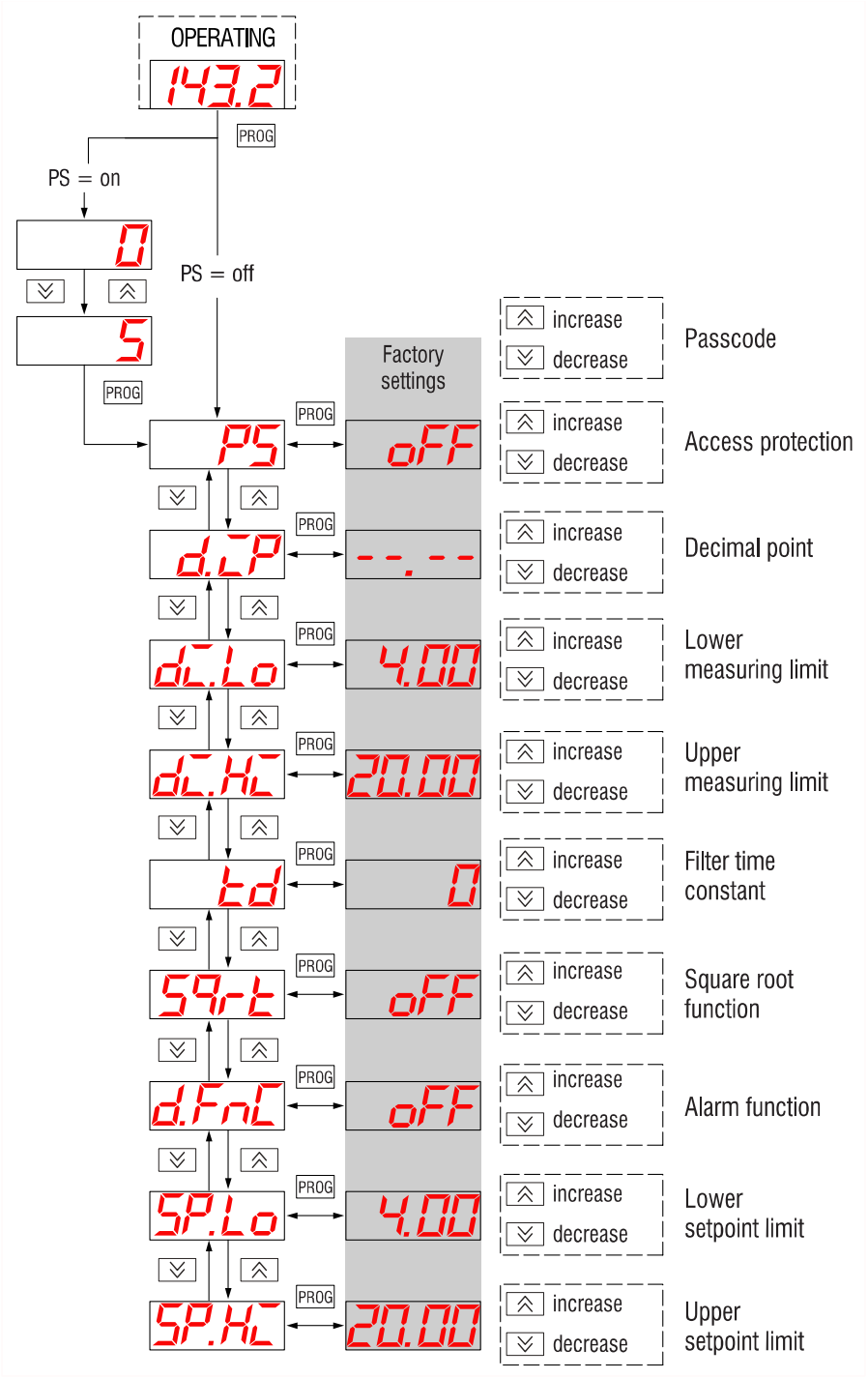


Fig 7.1

Notes:

1 The minus sign is displayed in the most significant digit, together with 1. If **di.P** = **---.-**, the display range is -99.9...999.9.
2 When setting the signal limits, take into account that in some cases the correct value cannot be displayed though there is no error indication.

Example 1:

di.Lo: -999 -> 4 mA
di.Hi: 9999 -> 20 mA
For the input current of 3.9 mA the correct indication should be “-1075”.

Example 2:

di.Lo: -999 -> 4 mA
di.Hi: 9999 -> 20 mA
For the input current of 20.8 mA the correct indication should be “10548”. Actually “0548” will be displayed.

If the access protection is disabled (**PS** = oFF), the passcode will be not requested.

If the access protection is activated, 0 is displayed.

Use the buttons and to enter the passcode 5, then press the PROG button to confirm.

If an incorrect passcode is entered, the device returns to the operating mode.

Potential errors and remedies are listed in Table 7.2.

Table 7.2 Error messages

Display	Possible cause	Remedy
Lo	Input current lower than 3.8 mA	Check input signal
HI	Input current higher than 22.5 mA	Check input signal
L - - - -	The top of the parameter list is reached	
- - - - L	The bottom of the parameter list is reached	
empty display	No input signal	Check input signal
	Reverse polarity	Check polarity

8 Maintenance

The maintenance includes:

– cleaning the housing and the terminals from dust, dirt and debris
– checking the fastening of the device
– checking the wiring (connecting leads, fastenings, mechanical damage)

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…+80 °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

–	ITP11	1
–	Gasket	1
–	Mounting nut	1
–	User guide	1

Appendix A. Dimensions

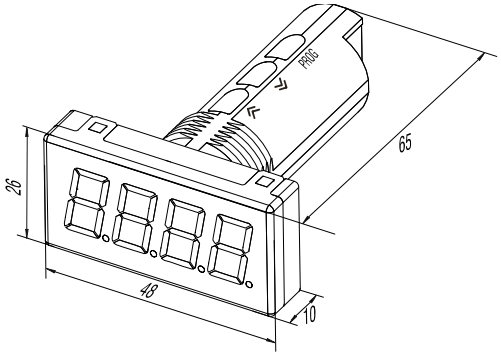


Fig. A1

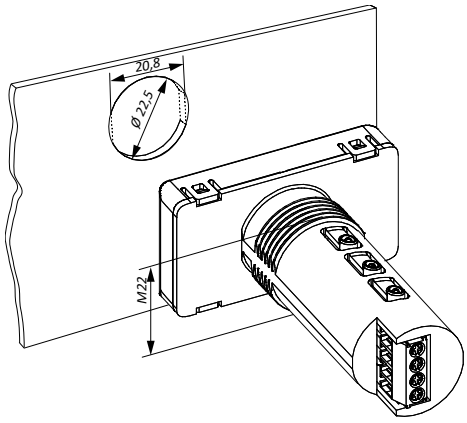


Fig. A2

To prevent the device spinning, the borehole in the front panel must correspond to the dimensions in Fig. A.2.