

# High-quality digital indicator for panel mounting

## Model DI35-M, with multi-function input

## Model DI35-D, with two inputs for standard signals

WIKA data sheet AC 80.03



for further approvals see  
page 11

### Applications

- Machine building and plant construction
- Test benches
- Level measurement
- General industrial applications

### Special features

- Multi-function input (29 calibrated input configurations) or double input (0/4 ... 20 mA, DC 0 ... 10 V) with calculation function
- Accuracy  $\leq \pm 0.01 \dots 0.1 \%$  of span  $\pm 1$  digit (depending on the input configuration)
- Transmitter power supply, MIN/MAX memory, HOLD/TARE/Totaliser function
- Linearisation with up to 30 programmable points possible
- Up to four freely programmable switch contacts (optional)

### Description

The model DI35 digital indicator is a multi-function and very accurate instrument for a wide variety of measuring tasks. It is available in two different versions:

#### ■ DI35-M

The version has a multi-function input with 29 different calibrated input configurations that can be selected via terminal connections and the input signal in the instrument configuration. The display can permanently show the MIN or MAX value. Moreover, a totaliser function is integrated.

#### ■ DI35-D

The version is equipped with two inputs for standard signals (0/4 ... 20 mA and DC 0 ... 10 V) that can be used in any combination. The display can show one of the two input signals or a calculated value. Calculations can be made by means of the four basic arithmetic operations (+ - \* /) and an additional constant multiplier.



High-quality digital indicator for panel mounting  
Model DI35

In addition, both versions offer the possibility to calibrate sensors and linearise using up to 30 points. This allows further adaptation of the displayed values to different sensor signals and application requirements.

The standard features are completed by a transmitter power supply, a HOLD function and a TARE function for the correction of offset shifts and sensor drifts. The sampling rate and display time can be configured and the display can be dimmed. Unauthorised alteration of the set instrument parameters can be prevented via different user levels, in conjunction with a freely selectable access code.

Optionally available are up to four freely programmable switch contacts, an analogue output signal and a serial interface.

## Digital indicator

### Principle

7-segment LED, red, 5-digit  
Brightness adjustable in 10 gradations  
Character size: 14 mm

### Indication range

-9999 ... 99999

### Display rate

0.1 ... 10.0 seconds

### Memory

EEPROM (parameter memory), data preservation  
> 100 years

## Input

### Number and type

Selectable versions	
Option 1	1 x multi-function input (for model DI35-M)
Option 2	2 x input for standard signals (for model DI35-D)

### Input signal

- DI35-M: See tables "Accuracy/measuring errors of the input signals", page 4 + 5
- DI35-D: 0 ... 20 mA,  $R_I \approx 50 \Omega$   
4 ... 20 mA,  $R_I \approx 50 \Omega$   
DC 0 ... 10 V,  $R_I \approx 150 \text{ k}\Omega$

### Digital input

< 2.4 V off, > 10 V on, max. DC 30 V,  $R_I \approx 5 \text{ k}\Omega$

### Input configuration

Selectable via terminal connections and menu-driven programming

### Accuracy

See tables "Accuracy/measuring errors of the input signals", page 4 + 5

### Temperature error

50 ppm/K, at ambient temperature  $T_U < 20 \text{ }^\circ\text{C}$  or  $T_U > 40 \text{ }^\circ\text{C}$

### Measuring principle

Sigma/delta

### Resolution

24 bit (with 1 second measuring time)

### Measuring time

- DI35-M: 0.02 ... 10.0 s
- DI35-D: 0.02 ... 10.0 s, for single-channel measurement  
0.04 ... 10.0 s, for two-channel measurement

### Transmitter power supply

DC 24 V, max. 50 mA, galvanically isolated

## Analogue output (option)

### Number and type

1 analogue output (galvanically isolated)

### Output signal

4 ... 20 mA (12-bit), load  $\leq 500 \Omega$   
0 ... 20 mA (12-bit), load  $\leq 500 \Omega$   
DC 0 ... 10 V (12-bit), load  $\geq 100 \text{ k}\Omega$

Switchable via programming and via DIP switches on rear of instrument.

### Error

0.1 % in the range 20 ... 40 °C  
50 ppm/K outside temperature error

### Internal resistance

100  $\Omega$  (with measuring input DC 0 ... 10 V)

## Switching output (option)

### Number and type

2 or 4 switch contacts (relays), freely programmable

### Load capacity

AC 250 V, 5 A (resistive load)  
DC 30 V, 5 A (resistive load)

### Number of switching operations

0.5 x 10<sup>5</sup> at max. contact load  
5 x 10<sup>6</sup> mechanical  
Isolation in accordance with DIN EN 50178  
Parameters in accordance with DIN EN 60255

## Voltage supply

### Power supply

Selectable versions	
Standard	AC 100 ... 240 V, 50/60 Hz, DC 100 ... 240 V
Option	DC 10 ... 40 V, AC 18 ... 30 V, 50/60 Hz

Power supply galvanically isolated

### Power consumption

max. 15 VA

### Electrical connection

Removable plug-in terminal  
Wire cross-section up to 2.5 mm<sup>2</sup>

## Communication (option)

### Interface

Selectable versions	
Option 1	RS-232 (not galvanically isolated)
Option 2	RS-232 (galvanically isolated)
Option 3	RS-485 (not galvanically isolated, only for point-to-point connection)
Option 4	RS-485 (galvanically isolated, only for point-to-point connection)

### Protocol

Manufacturer-specific ASCII

### Baud rate

9,600 baud, no parity, 8 data bits, 1 stop bit

### Cable length

RS-232: max. 3 m

RS-485: max. 1,000 m

## Case

### Material

Glass-fibre reinforced polycarbonate, black

### Ingress protection (per IEC 60529)

Front: IP65, rear: IP00

### Dimensions

See "Dimensions in mm", page 8

### Recommended mounting grid

120 mm horizontal, 96 mm vertical

### Weight

approx. 350 g

### Mounting

Sliding fasteners, fixed via screws, for panel thicknesses up to 15 mm

## Desktop case

The desktop case is available as an option for the model DI35-D.

### Input signal

Only available with 4 ... 20 mA

### Switching outputs

Only available with 2 switching outputs

### Material

- Front, rear, side plates: aluminium, black, powder-coated
- Cover, base plate: hard paper, black (Pertinax)

### Ingress protection (per IEC 60529)

IP40

### Dimensions

See "Dimensions in mm", page 8

### Weight

approx. 1.6 kg

## Operating conditions

### Permissible ambient temperatures

Operation: 0 ... 50 °C

Storage: -20 ... +80 °C

### Humidity

0 ... 75 % r. h. annual mean, without condensation

## Accuracy/measuring errors of the input signals

### Inputs with factory calibration

Input signals	Measuring span	Measuring error in % of the measuring span <sup>1)</sup>	Minimum measuring time		
			DI35-M	DI35-D	
				1-channel measurement	2-channel measurement
<b>Current signals</b>	0 ... 20 mA	$\leq \pm 0.02\% \pm 1$ digit	0.02 s	0.02 s	0.04 s
	4 ... 20 mA	$\leq \pm 0.02\% \pm 1$ digit	0.02 s	0.02 s	0.04 s
<b>Voltage signals</b>	DC 0 ... 18 mV	$\leq \pm 0.06\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 35 mV	$\leq \pm 0.06\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 75 mV	$\leq \pm 0.04\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 150 mV	$\leq \pm 0.03\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 300 mV	$\leq \pm 0.03\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 600 mV	$\leq \pm 0.03\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 1,250 mV	$\leq \pm 0.03\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 2,500 mV	$\leq \pm 0.03\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 5 V	$\leq \pm 0.02\% \pm 1$ digit	0.02 s	-	-
	DC 0 ... 10 V	$\leq \pm 0.01\% \pm 1$ digit	0.02 s	0.02 s	0.04 s
<b>Thermocouples</b>					
Type B, PtRh-PtRh	-100 ... +1,810 °C	$\leq \pm 0.10\% \pm 1$ digit	0.04 s	-	-
Type E, NiCr-CuNi	-260 ... +1,000 °C	$\leq \pm 0.06\% \pm 1$ digit	0.04 s	-	-
Type J, Fe-CuNi	-210 ... +1,200 °C	$\leq \pm 0.05\% \pm 1$ digit	0.04 s	-	-
Type K, NiCr-Ni	-250 ... +1,271 °C	$\leq \pm 0.05\% \pm 1$ digit	0.04 s	-	-
Type L, Fe-CuNi	-200 ... +900 °C	$\leq \pm 0.06\% \pm 1$ digit	0.04 s	-	-
Type N, NiCrSi-NiSi	-250 ... +1,300 °C	$\leq \pm 0.06\% \pm 1$ digit	0.04 s	-	-
Type R, PtRh-Pt	0 ... 1,760 °C	$\leq \pm 0.07\% \pm 1$ digit	0.04 s	-	-
Type S, PtRh-Pt	0 ... 1,760 °C	$\leq \pm 0.06\% \pm 1$ digit	0.04 s	-	-
Type T, Cu-CuNi	-240 ... +400 °C	$\leq \pm 0.07\% \pm 1$ digit	0.04 s	-	-
<b>Resistance thermometer <sup>2)</sup></b>					
Pt100 (2-/4-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.04 s	-	-
Pt100 (3-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.06 s	-	-
Pt200 (2-/4-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.04 s	-	-
Pt200 (3-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.06 s	-	-
Pt500 (2-/4-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.04 s	-	-
Pt500 (3-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.06 s	-	-
Pt1000 (2-/4-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.06 s	-	-
Pt1000 (3-wire)	-200 ... +850 °C	$\leq \pm 0.04\% \pm 1$ digit	0.04 s	-	-

1) The indication of the measuring error applies to ambient temperatures 20 ... 40 °C and the measuring time of 1 second.

2) The indications for Pt100 3-/4-wire apply at a max. lead resistance of 10 Ω.

## Inputs for sensor calibration

Input signals	Measuring span	Measuring error in % of the measuring span <sup>1)</sup>	Minimum measuring time		
			DI35-M	DI35-D	
				1-channel measurement	2-channel measurement
<b>Current signals</b>	0 ... 2 mA	≤ ±0.02 % ±1 digit	0.02 s	-	-
	0 ... 5 mA	≤ ±0.02 % ±1 digit	0.02 s	-	-
	0 ... 20 mA	≤ ±0.02 % ±1 digit	0.02 s	0.02 s	0.04 s
	4 ... 20 mA	≤ ±0.02 % ±1 digit	0.02 s	0.02 s	0.04 s
<b>Voltage signals</b>	DC -18 ... +18 mV	≤ ±0.06 % ±1 digit	0.02 s	-	-
	DC -35 ... +35 mV	≤ ±0.06 % ±1 digit	0.02 s	-	-
	DC -75 ... +75 mV	≤ ±0.04 % ±1 digit	0.02 s	-	-
	DC -150 ... +150 mV	≤ ±0.03 % ±1 digit	0.02 s	-	-
	DC -300 ... +300 mV	≤ ±0.03 % ±1 digit	0.02 s	-	-
	DC -500 ... +600 mV	≤ ±0.03 % ±1 digit	0.02 s	-	-
	DC -500 ... +1,250 mV	≤ ±0.03 % ±1 digit	0.02 s	-	-
	DC -500 ... +2,500 mV	≤ ±0.03 % ±1 digit	0.02 s	-	-
	DC -1 ... +5 V	≤ ±0.02 % ±1 digit	0.02 s	-	-
	DC -1 ... +10 V	≤ ±0.01 % ±1 digit	0.02 s	0.02 s	0.04 s
<b>Resistance (2-, 3-, or 4-wire)</b>	0 ... 100 Ω	≤ ±0.04 % ±1 digit	0.04 s	-	-
	0 ... 1 kΩ	≤ ±0.04 % ±1 digit	0.04 s	-	-
	0 ... 10 kΩ	≤ ±0.04 % ±1 digit	0.04 s	-	-

1) The indication of the measuring error applies to ambient temperatures 20 ... 40 °C and the measuring time of 1 second.

## Terminal assignment

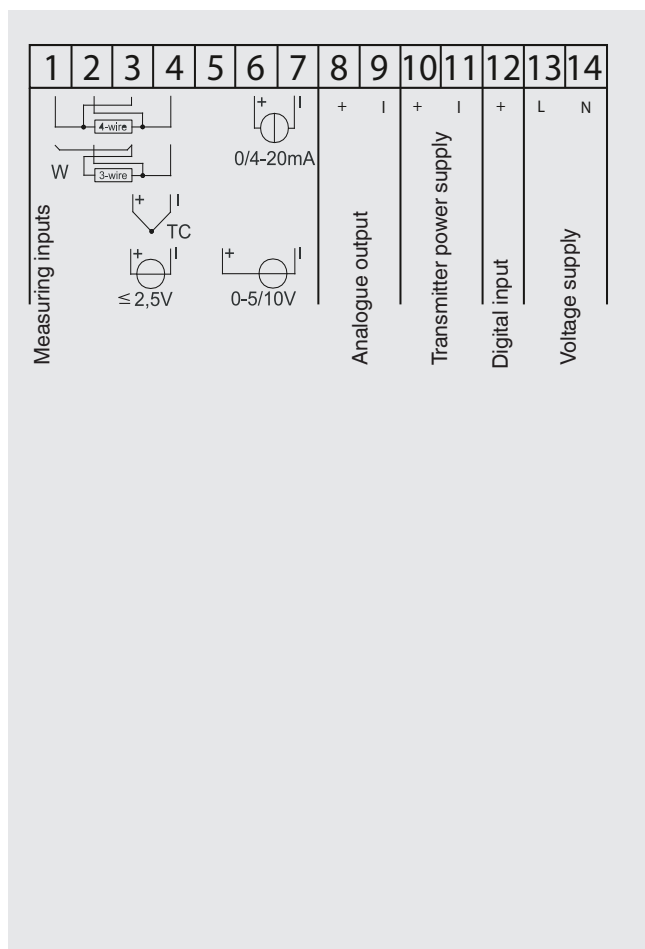
### Terminal strip at the top for DI35-M and DI35-D



Terminal	Case labelling	Meaning
21	S1	Switch contact 1 <sup>1)</sup> Normally closed
22		Normally open
23		COM
24	S2	Switch contact 2 <sup>1)</sup> Normally closed
25		Normally open
26		COM
27	S3	Switch contact 3 <sup>1)</sup> Normally closed
28		Normally open
29		COM
30	S4	Switch contact 4 <sup>1)</sup> Normally closed
31		Normally open
32		COM
41	GND	Serial interface RS232 <sup>1)</sup>
		Serial interface RS485 <sup>1)</sup>
42	TxD	Serial interface RS232 <sup>1)</sup>
		Serial interface RS485 <sup>1)</sup>
43	RxD	Serial interface RS232 <sup>1)</sup>
		Serial interface RS485 <sup>1)</sup>

1) Option

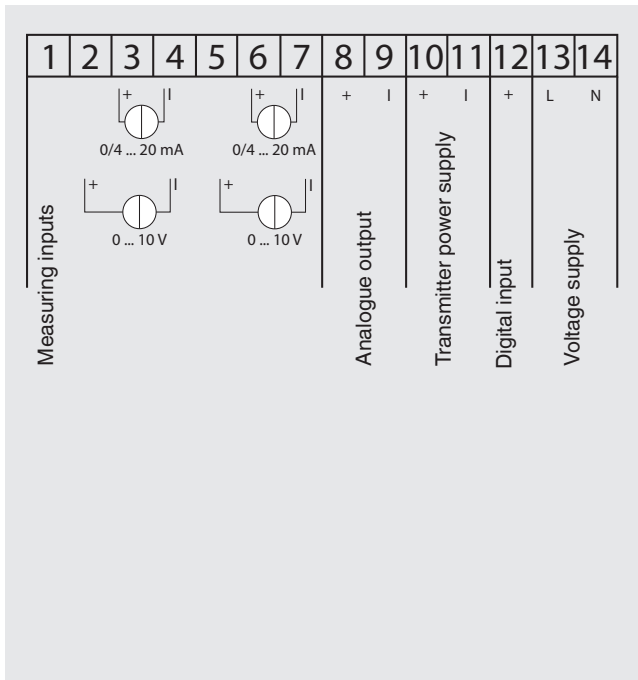
### Terminal strip below for DI35-M



Terminal	Case labelling	Meaning
1		Measuring input Resistance thermometer
2		Measuring input Resistance thermometer
3		Measuring input Resistance thermometer
	+	Voltage measuring signal ≤ 2.5 V
	+	Thermocouple measuring signal
4		Measuring input Resistance thermometer
	-	Voltage measuring signal ≤ 2.5 V
	-	Thermocouple measuring signal
5	+	Voltage measuring signal
6	+	Current measuring signal
7	-	Voltage measuring signal
	-	Current measuring signal
8	+	Analogue output <sup>1)</sup>
9	-	
10	+	Transmitter power supply
11	-	
12	+	Digital input
13	L	Power supply
14	N	

1) Option

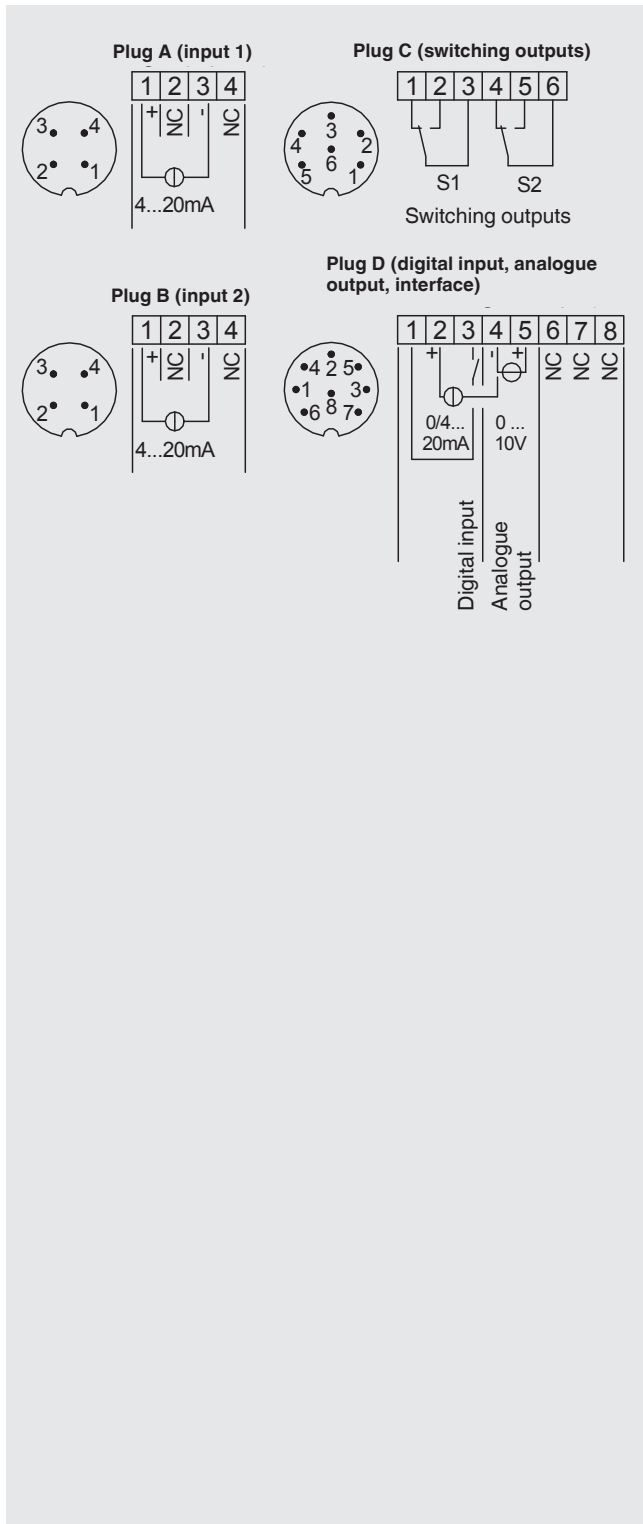
## Terminal strip below for DI35-D



Terminal	Case labelling	Meaning
1		Not connected
2	+	Voltage measuring signal
3	+	Voltage measuring signal
4	-	Voltage measuring signal
	-	Current measuring signal
5	+	Voltage measuring signal
6	+	Current measuring signal
7	-	Voltage measuring signal
	-	Current measuring signal
8	+	Analogue output <sup>1)</sup>
9	-	
10	+	Transmitter power supply
11	-	
12	+	Digital input
13	L	Power supply
14	N	

1) Option

## Pin assignment for DI35-D in desktop case



Plug A (input 1)			
Terminal	Case labelling	Meaning	
1	+	Current measuring signal	Channel 1
2	NC	Not connected	
3	-	Current measuring signal	
4	NC	Not connected	

Plug B (input 2)			
Terminal	Case labelling	Meaning	
1	+	Current measuring signal	Channel 2
2	NC	Not connected	
3	-	Current measuring signal	
4	NC	Not connected	

Plug C (switching outputs)		
Terminal	Case labelling	Meaning
1	S1	Normally closed
2		Normally open
3		COM
4	S2	Normally closed
5		Normally open
6		COM

only with digital indicator with switch points

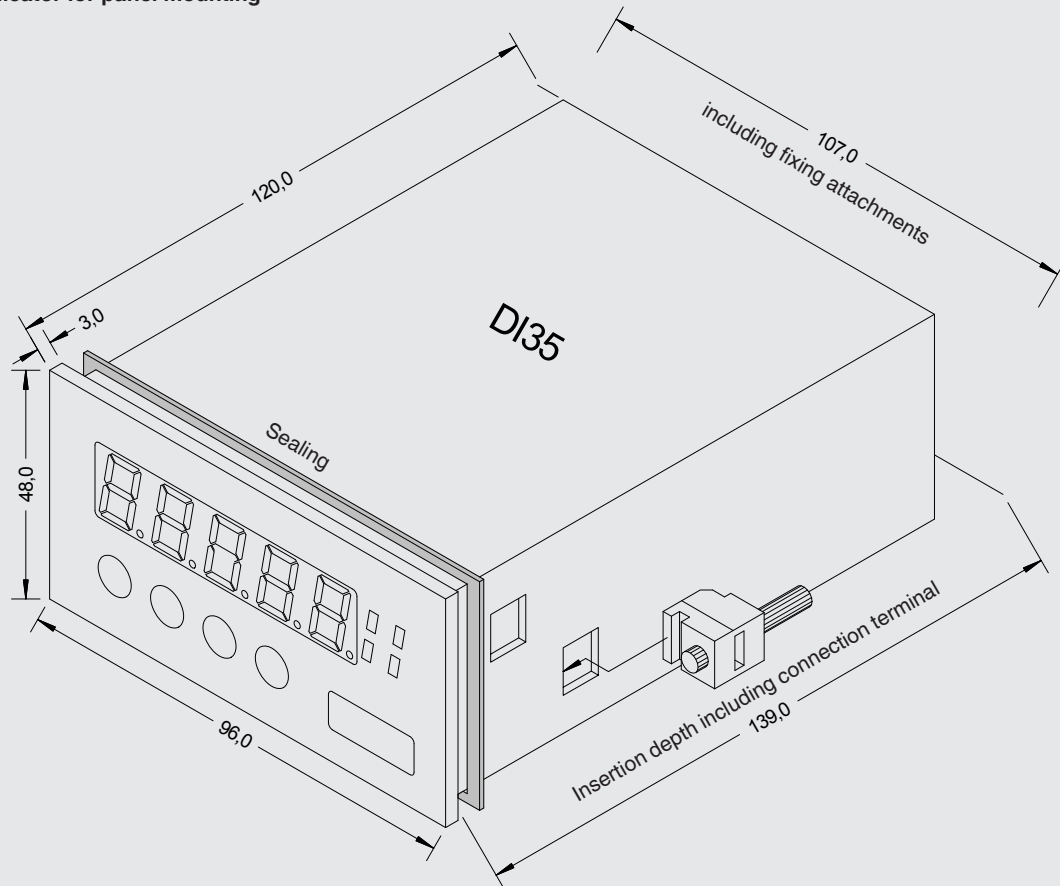
Plug D (digital output, analogue output, interface)		
Terminal	Meaning	
1	Digital input, supply DC 24 V, ≤ 50 mA	
2	Analogue output 0/4 ... 20 mA +	
3	Digital input +	
4	Analogue output 0/4 ... 20 mA and DC 0 ... 10 V -	
5	Analogue output 0 ... 10 V +	
6	GND	Serial interface RS232 Serial interface RS485
7	TxD	Serial interface RS232
	Data B(+)	Serial interface RS485
8	RxD	Serial interface RS232
	Data A(-)	Serial interface RS485

only with digital indicators with analogue output or interface

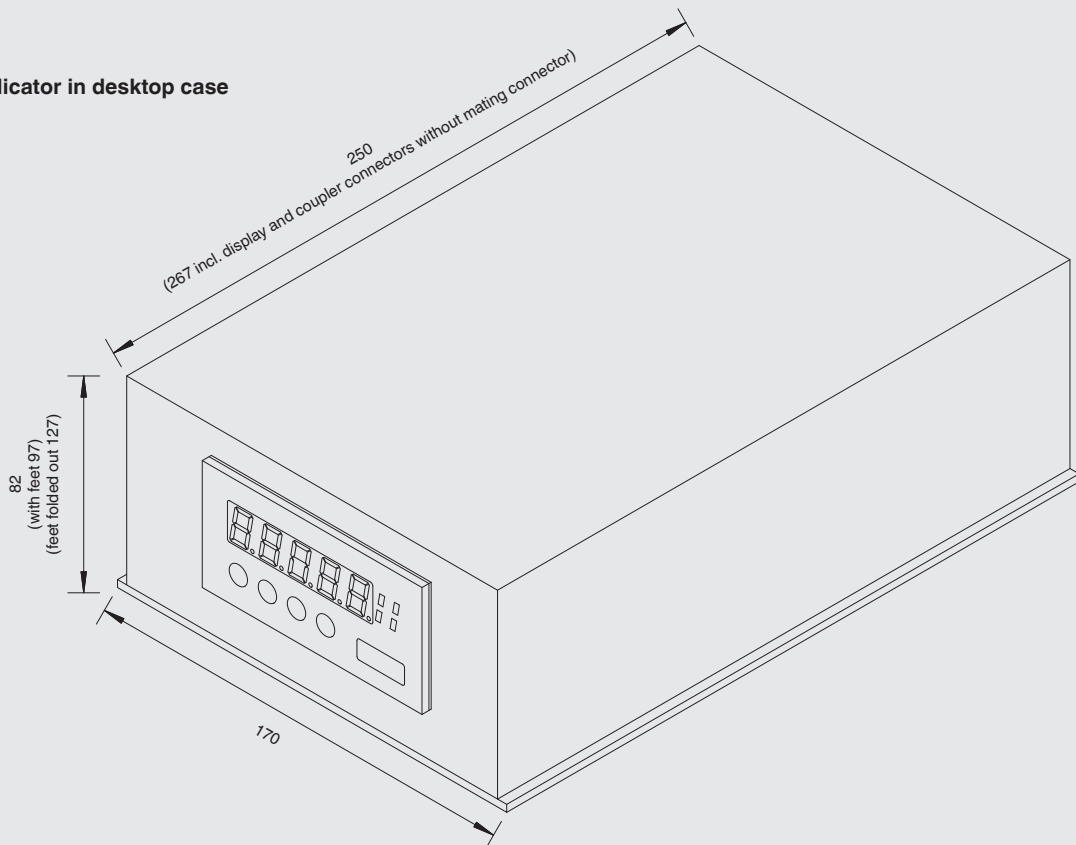


## Dimensions in mm

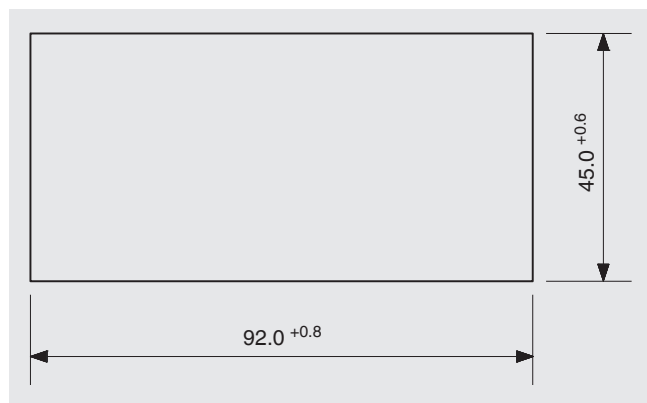
Digital indicator for panel mounting



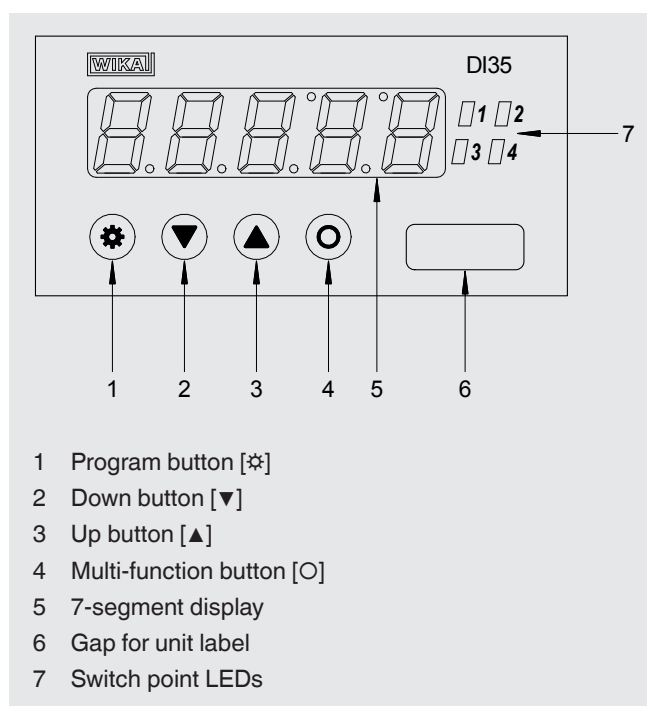
Digital indicator in desktop case



## Panel cutout in mm



## Display and control element



## Scope of delivery





### Version for panel mounting

- Digital indicator
- Sealing
- 2 mounting elements
- Operating instructions
- Unit characters

### Version in desktop case

- Digital indicator
- Mains connection cable with connector per CEE 7/4
- Operating instructions
- Unit characters
- Mating connector connections

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive, EN 61326 emission (group 1, class B) and interference immunity (industrial application)</li> <li>■ Low voltage directive</li> <li>■ RoHS directive</li> </ul>	European union
	<b>EAC</b> <ul style="list-style-type: none"> <li>■ Electromagnetic compatibility</li> <li>■ Low voltage directive</li> </ul>	Eurasian Economic Community
	<b>GOST</b> Metrology, measurement technology	Russia
	<b>BelGIM</b> Metrology, measurement technology	Belarus

Approvals and certificates, see website

### Ordering information

Model / Input / Switching outputs / Power supply / Transmitter power supply / Analogue output signal / Interface / Ingress protection / Instrument configuration

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