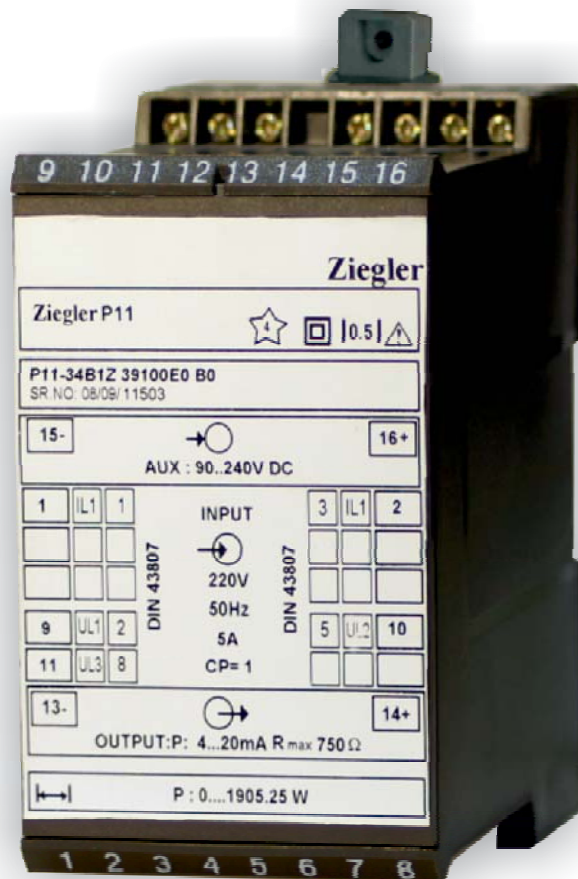
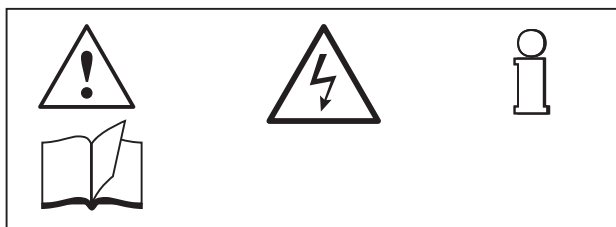


## Operating Instruction Transducer for active or reactive power Ziegler P11




Safety precautions to be strictly observed are marked with following symbols in the operating instructions :




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## 1. Read first and then



The proper and safe operation of the device assumes that the operating instructions are read and the safety warning given in the various sections



5. Mounting  
6. Electrical Connections  
are observed.

The device should only be handled by appropriately trained personnel who are familiar with it and authorised to work in electrical installations.

## 2. Scope of supply (Fig. 1)



Fig.1

## 3. Brief Description :

The Ziegler P11 measuring transducer is used where a power from a single phase or 3 phase AC network is to be converted into a DC signal (load independent current or voltage proportional to measured value). This transducer is available in single or dual output version & also with AC or DC aux. supply and self-power version.

## 4. Technical Data (Refer Fig.5)

Measuring Input  
Nominal frequency : 50 or 60 Hz.  
Nominal input voltage :  $100/\sqrt{3}$ ,  $110/\sqrt{3}$ , 100, 110, 200, 230, 400 or 500 V

Nominal input current : 1, 2 or 5 A

\* CSA approval for input ratings upto 500V & 5A for single output transducer.

### CECE Marking

#### Measuring Output

DC Current : 0....1mA to 0....20mA , 4.....20 mA

-1...0...1 to -20...0...20 mA

Burden voltage  $\pm 15$  V for single output

Burden voltage  $\pm 12$  V for dual output

External resistance -

$R_{ext} \text{ max. [KW]} \propto \frac{\text{Burden voltage}}{I_{AN} \text{ [mA]}}$

$I_{AN}$  = Full output value

DC Voltage : 0...10 V / 1...5 V / -10...0...10 V

Load Capacity 20 mA

External Resistance -

$R_{ext} \text{ (KW)} > \frac{U_A \text{ [V]}}{20 \text{ mA}}$

for single output

$U_A$  = Full output value

External Resistance -

$R_{ext} \text{ (KW)} > 10 \text{ KW} / V$  for dual output

#### Power Supply

AC Voltage : 24, 115, 120, 230 V or 240 V  $\pm 15\%$   
50/60 Hz

Power consumption approx. 5VA

for single output

Power consumption approx. 8VA

for dual output

DC Voltage : 24....90 V (24...60V for dual output)

or 90....240 V -15 /+33%

Power Consumption approx. 5W

for single output

Power consumption approx. 8W

for dual output

\* CSA approval for 230V AC  $\pm 10\%$ , 50/60 Hz.

### CECE Marking

#### Accuracy

Reference value : Output span

Exception :

(1) Largest of two unipolar

output levels for bipolar output

(2) According to datasheet, for

other special characteristics

Basic accuracy : Class 0.5

#### Electrical Safety

Installation Category : CAT III, Max. voltage to ground 500 V

Pollution degree : 2

Test Voltage : 4 KV between electrically isolated circuits and versus housing.

500 V between output 1 versus output 2 (for dual output)




Environmental conditions

- Climatic range : Climate class 3Z acc. to VDI/VDE 3540
- Relative humidity of annual mean : £ 75%
- Storage Temperature : -40°C to +70°C
- Operating Temperature : -25°C to +55°C
- Altitude : 2000 m max.
- For Indoor use only

5. Mounting

The Ziegler P11 can be mounted either on a top-hat rail or directly onto a wall or mounting plate.



Note "Environmental conditions" in section "4. Technical Data" while deciding the place of installation!

5.1 Top-hat rail mounting

Simply clip the device onto the top-hat rail (EN 50 022) (See Fig. 2)

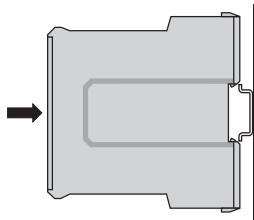


Fig.2 Mounting onto top-hat rail 35 x 15 or 35 x 7.5 mm.

5.2 Wall mounting

The screw hole brackets (1) can be released and pulled out by pressing on the latch (2). They can be pushed in after pressing the latch (3).

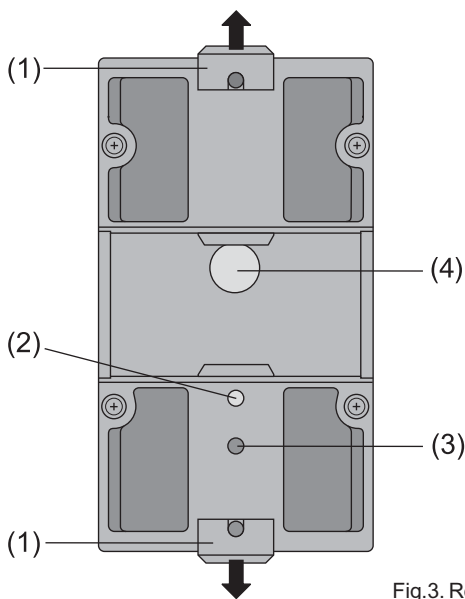
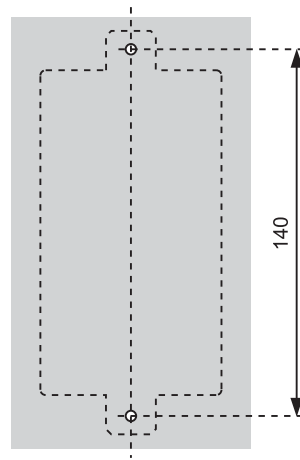


Fig.3. Rear at device

- (1) Screw hole brackets
- (2) Latch for pulling the screw hole brackets out
- (3) Latch for pushing the screw hole bracket in
- (4) Rubber buffer




Fixing the housing to a wall or mounting plate using two 4 mm diameter screws. Drill holes as shown in the drilling pattern (Fig.4)

Fig.4. Drilling Pattern


6. Electrical connections

Make connection as per printed label on transducer (Fig.5, example of a nameplate)



Impending danger by high input voltage or high mains voltage. Be aware of danger of open current transformer secondary. Make sure that the measuring input cables are not live (potential-free) when making the connections !

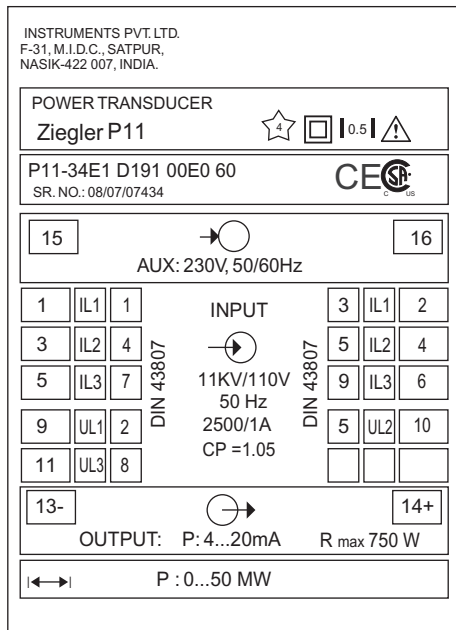
Note : It is strongly recommended to employ a circuit breaker in building installation to make provision for disconnection of the power supply to device and to provide protection in case of short circuit. The circuit breaker should be close to device, easily reachable and appropriately identified.



Note that,.....

- ... the data required to carry out the prescribed measurement must correspond to those marked on the nameplate of the Ziegler P11 ( ⊖ measuring input, ⊕ measuring output and → power supply. See Fig.5)
- ... the total loop resistance connected to the output (receiver plus leads) does not exceed the maximum permissible value  $R_{ext}$ ! See "Measuring output" in section "4. Technical data" for maximum values of  $R_{ext}$ !
- ... the measurement output cables should be twisted pairs and run as far as possible away from heavy current cables !

In all other respects, observe all local regulations when selecting the type of electrical cable and installing them!



Manufacturer	
Type designation	
Works No..	
	Power Supply
Input	
	Nominal Voltage Nominal Frequency Nominal Current
Output	
	Output signal Output resistance

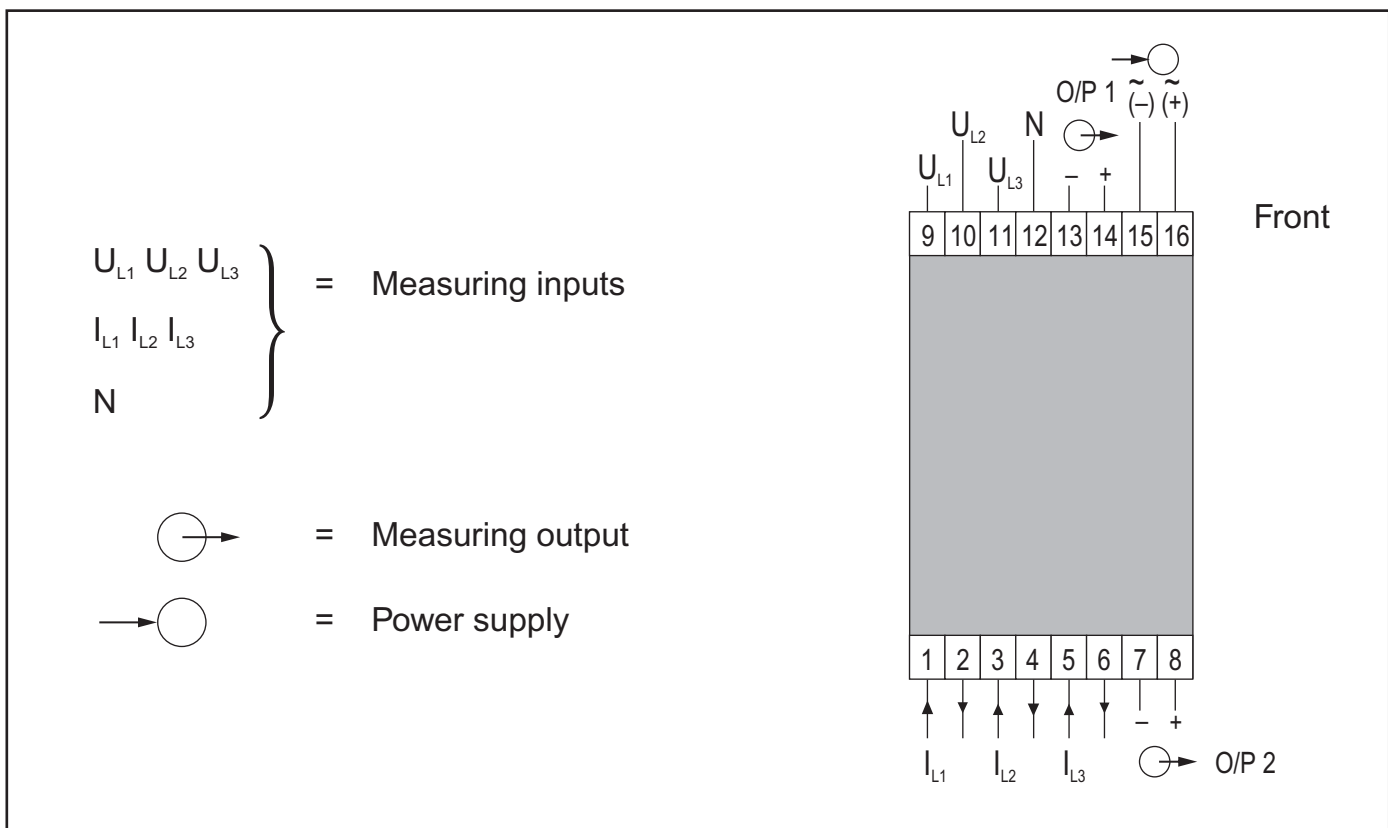
Fig.5. Declaration of type label

Meaning of symbols on device

- Warning of danger (Caution, see documentation)
- Double insulation Class II device
- CSA approval for US and Canada
- Test voltage 4 KV
- EU Conformity mark

Note : Terminal 7 & 8 applicable only for dual output transducer (for output 2) While making connections ensure that direction of energy and phase sequence are adhered to.

Fig.6. Electrical Connections



## Measuring inputs

Application	Terminal allocation		
Active or reactive power measurement in single-phase AC network			
Active power measurement in 3-wire 3-phase network balanced load			
Reactive power measurement in 3-wire 3-phase network balanced load			
Active or reactive power measurement in 3-wire 3-phase network balanced load  Phase shift U: L1-L3 I: L1			
Active or reactive power measurement in 3-wire 3-phase network balanced load  Phase shift U: L1-L2 I: L1			
Active or reactive power measurement in 3-wire 3-phase network unbalanced load			

Measuring inputs	
Application	Terminal allocation
Active power measurement in 4-wire 3-phase network unbalanced load	
	3 single-pole insulated voltage transformer in the high-voltage system
Reactive power measurement in 4-wire 3-phase network unbalanced load	
	3 single-pole insulated voltage transformer in the high-voltage system
Active or reactive power measurement in 4-wire 3-phase network unbalanced load (special circuit)	
(Delta connection using 2 VT's L1 - N and L3 - N, Open-Y connection)	

## 7. Commissioning and maintenance

Switch on the power supply and the measuring input. During the operating, you can disconnect the output and connect a test equipment e.g. For a functional test. No maintenance is required.

## 8. Releasing the transducer

Release the transducer from a top-hat rail as shown in Fig. 6

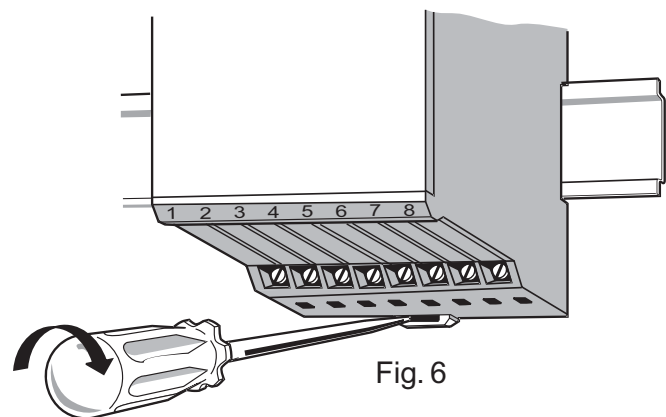


Fig. 6

## 9. Dimensional drawings

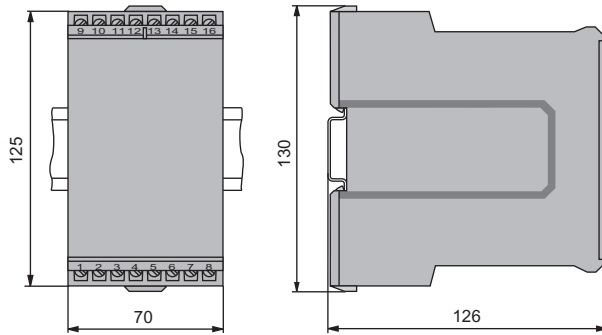


Fig.7 Ziegler P11 in housing E16 clipped onto a top hat rail (35 x 15 mm or 35 x 7.5 mm, acc. to EN 50 022).

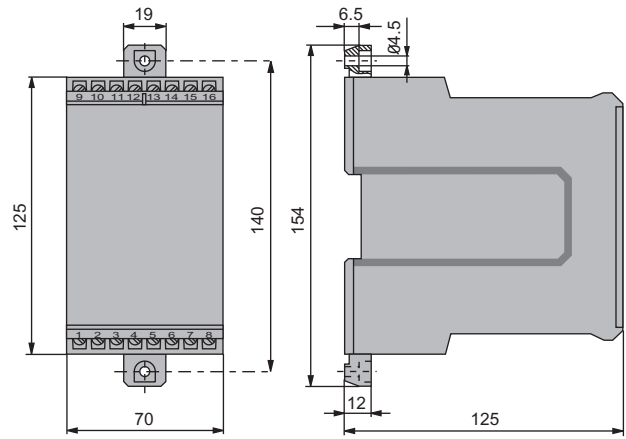
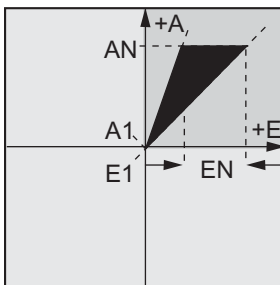


Fig.8 Fig.7 Ziegler P11 in housing E16 with the screw hole brackets pulled out for wall mounting.

## 10. Special Features

Admissible measuring range and value

- ① Calibration factor  $c^3$  0.25 to 0.74  
Limitation : Class 1, linearity error  $\pm 0.4\%$
- ② Calibration factor  $c^3$  1.3 to 1.5  
Limitation : Class 1, linearity error  $\pm 0.4\%$
- ③ Zero displacement  
10 to 125% in positive or negative direction
- ④ Variable sensitivity  $\pm 5\%$  of full scale value
- ⑤ Variable sensitivity  $\pm 10\%$  of full scale value  
Limitation : Class1 (not possible with zero displacement or live-zero output)
- ⑥ Two calibration factors  
(c min. 0.25 ; c max. 1.5  
Limitation : The sensitivity ratio should not exceed 1 : 2.  
Circuit change is achieved by soldering a wire link on the PCB.



Example :

1. Measuring range :  
0...10MW  
3 x 50 000 / 100 V  
2 x 100 / 5 A  
c1 = 1.154  
Output 0...20 mA
2. Measuring range :  
0...5 MW  
c2 = 0.577  
Output 0...20 mA

Nominal Frequency  $f_N$

- ⑦ between 16 2/3 Hz and 500 Hz, other than the standard frequencies 50 or 60 Hz  
Limitation  
Class 1, linearity error  $\pm 0.4\%$   
With frequency  $< 40$  Hz  
Response time  $< 800$  ms,  $I_N \leq 5$  A  
Residual ripple  $< 2\%$  p.p.

Nominal Input voltage  $U_N$

- ⑧ between 10 and 660 V, other than the standard values  $100/\sqrt{3}$ ,  $110/\sqrt{3}$ , 100, 110, 200, 230, 400 or 500 V  
Limitation :  
with  $U_N > 500$  V overload capacity 2000 V, 2s

Nominal Input current  $I_N$

- ⑨ between 0.01 and 10 A, other than the standard values 1, 2, or 5 A  
Limitations  
with  $I_N > 5$  A:  
Power consumption  $< 0.3$  VA per current circuit  
Overload capacity of current circuit  
 $2 \times I_N$ , continuous  
 $10 \times I_N$  for 10 s max. 5 times at 5 minute intervals  
 $40 \times I_N$  for 1 s max. 250 A, once only  
 $f_N > 40$  Hz  
with  $I_N > 8.3$  A  
Reference conditions  $I_E \leq 10$  A

Output signal A (measuring output A)

- ⑩ Unipolar load-independent DC voltage\*  
Ranges between 0...1 and 0...15 V, other than the standard range 0...10 V
- ⑪ Bipolar - symmetrical load-independent DC Voltage\*  
Ranges between -1...0...1 and -15...0...15 V, other than the standard range -10...0...10 V

⑫ Bipolar - asymmetrical load-independent DC Voltage\* Ranges

$-U_A$	$+U_A$	$U_A$ Total
min. -1.0V	min. + 1.0 V	min. 2 V
max. -15 V	max. + 15 V	max. 30 V

⑬ Live-zero\*  
 Ranges between 0.2...1 and 3...15 V, other than the standard range 1...5 V  
 \*Limitation  $U_{AN} < 4$  V  
 Additional error :  
 Burden Dependency  
 $D R_{ext}$  max. = 0.2%  
 Reference conditions:  
 External resistance  $2 \times R_{ext}$  min.  $\pm 20\%$

⑭ Unipolar Load-independent DC current ranges between 0...1 and 0...20 mA, other than the standard range 0...1/0...5/0...10 and 0...20 mA

⑮ Bipolar - symmetrical load-independent DC current ranges between -1..0...1 and -20...0...20 mA, other than the standard range -1...0...1 / -2.5...0...2.5 / -5...0...5/-10...0...10 & -20...0...20 mA

⑯ Bipolar - asymmetrical load-independent DC current ranges

$-I_A$	$+I_A$	$I_A$ Total
min. -1.0mA	min. + 1.0 mA	min. 2 mA
max. -20 mA	max. + 20 mA	max. 40 mA

⑰ Live-zero  
 Ranges between 1..5 and 4...20 mA, other than the standard range 4...20 mA

Residual ripple in output current

⑱ £ 0.5% p.p. instead of < 1% p.p.  
 Limitations : Response time < 800 ms instead of < 300 ms  
 (Not possible for nominal frequency < 50 Hz)

Power supply

⑲ with AC Voltage  
 any voltage between 24 and 500 V, for one output & 24 and 240V for two outputs  $\pm 15\%$ , 42 to 70 Hz, apart from standard voltages 24, 115, 120, 230 and 240 V  
 Power consumption approx. 5 VA for single output & 8VA for output dual output

⑳ without separate power supply connection  
 Power Supply from voltage input signal\*)  
 ( 24V £H£500 V, f 50 or 60 Hz for one output)  
 ( 24V £H£240 V, f 50 or 60 Hz for two output)  
 Limitations :  
 Reference condition : Input voltage  $U_N \pm 15\%$   
 Overload capacity of the input  
 1.2 .  $U_N$  continuous  
 1.5 .  $U_N$  1 s  
 With  $U_N^3 \leq 170$  V  
 Impulse withstand voltage acc. to IEC 255-4, Cl. II : 1 kV, 1.2/50  $\mu$ s, 0.5 Ws or overload capacity of the voltage input max. 680 V~, 2 s  
 The additional power taken from the input voltage signal is approx. 5 VA  
 \*) Standard connection between : L1 and N with single phase AC current and Open-Y connection.  
 Other between L1 and L2

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