



-power in control



## DATA SHEET



### Selectable AC transducer, TAS-331DG

- Measures power or reactive power on 3-phase AC networks
- Class 0.5 (IEC-688) measurement
- Supply and measuring voltage up to 690 V
- Easy configuration via PC interface
- Non-linear output characteristics



DEIF A/S · Frisenborgvej 33 · DK-7800 Skive  
Tel.: +45 9614 9614 · Fax: +45 9614 9615  
info@deif.com · www.deif.com

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# 1. Data sheet

## 1.1 Contents

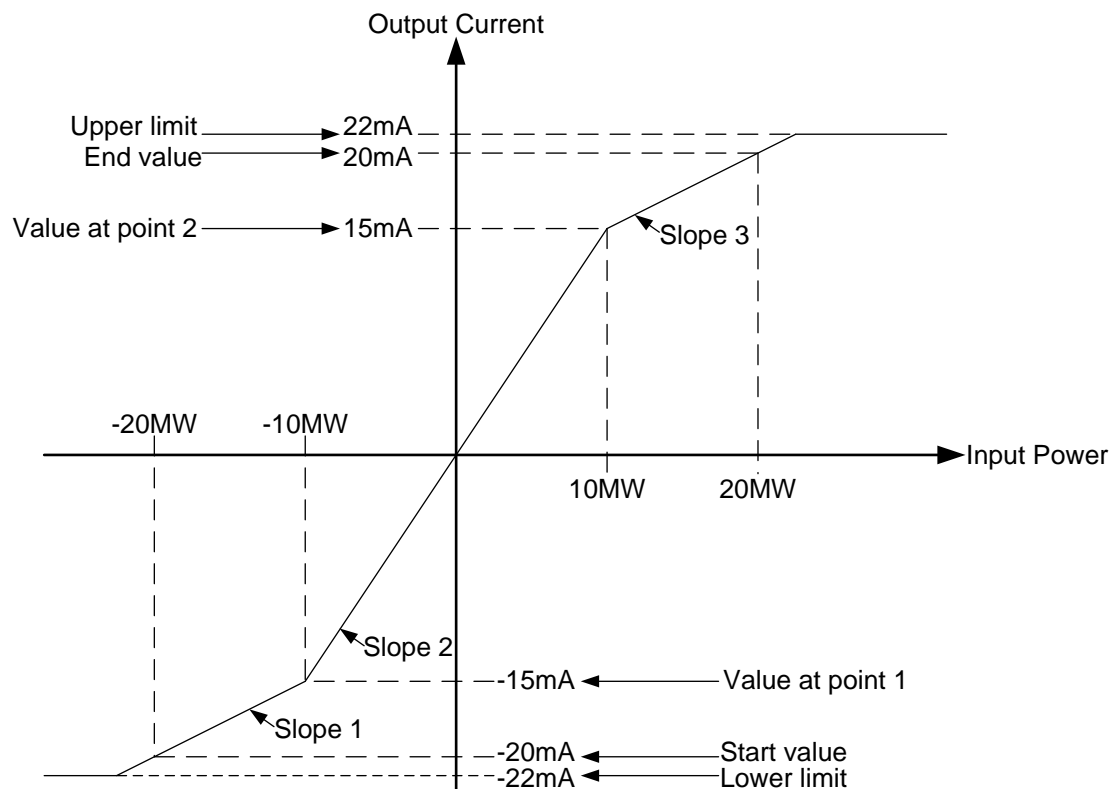
### 1.1.1 Application

TAS-331DG is a micro-controller based AC transducer with 1 analogue output for measurement of power or reactive power on an AC network. TAS-331DG can be delivered pre-configured to the desired measuring value and range or it can be delivered un-configured for customer configuration through the PC interface. The PC configuration makes free adjustment of the full input range and output range possible without any mechanical settings or adjustments inside the transducer. The transducer holds no mechanical moving parts like potentiometers, and the calibration stability is excellent. TAS-331DG will check the wiring for faults when starting up and indicate possible faults on an LED.

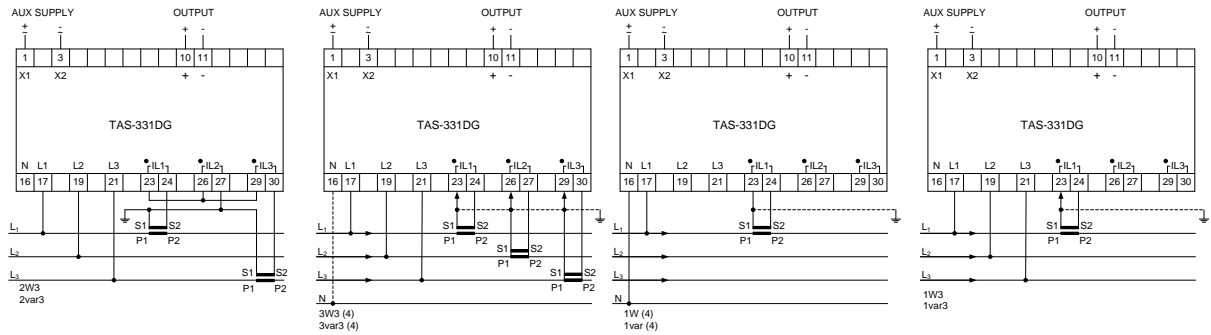
TAS-331DG can be configured as a normal linear transducer or with up to three slopes giving the possibility for a higher resolution in one or two ranges of the measurement. See figure below for an example of three slopes. Upper and lower output limitations can also be configured.

### 1.1.2 Example of triple slope

For further examples, see data sheets for TAS-311DG/TAS-321DG.



### 1.1.3 Connection diagram



**With voltages above 480 V phase-phase! The secondary side of the current transformer MUST be connected to earth. Alternatively, a double insulated current transformer can be used.**

### 1.1.4 Technical specifications

Accuracy	Class 0.5 (-10...15...30...55°C) according to IEC 688
Influence, phase angle	$\leq \pm 0.75^\circ$
Meas. current ( $I_n$ )	0.75/1.5/3.0/6.0 A Meas. range ( $I_n$ ): 0...200 %
Overload, currents	20 A max., continuously 75 A max. for 10 s 240 A max. for 1 s
Load	Max. 0.5 VA
Meas. voltage ( $U_n$ )	73/140/254/400 V phase to neutral Meas. range ( $U_n$ ): 30...120 % $U_n$ (57...400 V) 127/240/440/690 phase to phase Meas. range ( $U_n$ ): 30...120 % $U_n$ (100...600 V)
Overload, voltages	1.2 x $U_n$ max., continuously 2 x $U_n$ max. for 10 s
Load	Min. 480 k $\Omega$
Frequency range	30...45...65...80 Hz Note: For fundamental frequency (1. harmonic) outside 20 Hz...80 Hz, the input is fixed to 0
Indication	Red LED function: (The LED is located behind the front plate) Incorrect wiring = constant light, only active for coupling 1W3, 2W3, 3W3(4) and 1var3, 2var3, 3var3(4). Check at power up, in case of doubt disconnect supply and reconnect. Calibration error = flash frequency 5 Hz Configuration error = flash frequency 1 Hz
Output	1 analogue output
Standard range	Output (0...100 %): 0...1 mA, 0...5 mA, 0...10 mA, 0...20 mA, 0...1 V, 0...5 V, 0...10 V Output (10...100 %): 0.1...1 mA, 0.5...5 mA, 1...10 mA, 2...20 mA, 0.1...1 V, 0.5...5 V, 1...10 V Output (20...100 %): 0.2...1 mA, 1...5 mA, 2...10 mA, 4...20 mA, 0.2...1 V, 1...5 V, 2...10 V Output (-100...0...100 %): -1...0...1 mA, -5...0...5 mA, -10...0...10 mA, -20...0...20 mA, -1...0...1 V, -5...0...5 V, -10...0...10 V Other ranges possible
Limit	Max. $\pm 120$ % of nominal output
Output load	Burden if current output: Max. 10 V (max. 1 k $\Omega$ ) Burden if voltage output: Max. 20 mA
Output cable	Max. length 30 m
$\Delta$ out/ $\Delta$ Rload	10 V, 5 V, 1 V, 20 mA ranges according to IEC 688 10 mA, 5 mA, 1 mA ranges $\pm 0.5$ %
Ambient temperature	-10...55°C (nominal) -25...70°C (operating) -40...70°C (storage)

Temperature coefficient	Max. $\pm 0.2$ % of full scale per 10°C
Response time	Coupling 2W3/2var3, 3W3/3var3, 3W4/3var4 <225 ms, typically 200 ms Coupling 1W1var, 1W4/1var4 <150 ms, typically 125 ms Coupling 1W3/1var3 <125 ms, typically 100 ms
Ripple	Twice the class index (peak to peak measurement) according to IEC 688
Galvanic separation	AC aux. supply models: Between inputs, outputs and aux. supply: 3750 V-50 Hz-1 min. DC aux. supply models: Between inputs and outputs: 3750 V-50 Hz-1 min. Between inputs and supply: 3750 V-50 Hz-1 min. Between supply and outputs: 1500 V-50 Hz-1 min.
Aux. supply voltage	57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-480-660-690 V AC $\pm 20$ % 24-48-110-220 V DC -25/+30 %
Consumption	(Aux. supply) 3.5 VA/2 W
Climate	HSE, to DIN 40040
EMC	According to EN 61000-6-1/2/3/4
Protection	Housing: IP40. Terminals: IP20 to IEC 529 and EN 60529
Connections	Max. 2.5 mm <sup>2</sup> multi-stranded Max. 4.0 mm <sup>2</sup> single-stranded
Materials	All plastic parts are self-extinguishing to UL94 (V1)

### 1.1.5 Available variants

Type	Variant no.	Description	Item no.	Note
TAS-331DG, power	01	TAS-331DG, customised - AC voltage aux. supply	2962010200-01	
TAS-331DG, power	02	TAS-331DG, customised - DC voltage aux. supply	2962010200-02	
TAS-331DG	03	TAS-331DG, unconfigured - AC voltage aux. supply	2962010200-03	
TAS-331DG	04	TAS-331DG, unconfigured - DC voltage aux. supply	2962010200-04	

### 1.1.6 Available accessories

Type	Description	Item no.	Note
Accessories for TAS	TAS configuration kit	2032410021	
Accessories for TAS	30 extra labels	2192410001	

### 1.1.7 Order specifications (examples)

The examples below are order specifications for pre-configured transducers. For un-configured transducers, only auxiliary voltage must be specified.

TAS-321DG		
Item no.	2962010200-02	2962010200-01
Type	Power	Power
Variant no.	02	01
Measuring range	0...2 MW	0...1 Mvar (2Mvar) <sup>1)</sup>
Coupling <sup>2)</sup>	1W3	1 var3
VT ratio	10 kV/100 V	10 kV/100 V
Measuring voltage	100 V	100 V
CT ratio	100/5 A	100/5 A
Transfer curve	Single slope	Dual slope
Output start value	4 mA	4 mA
Value at point 1	-	20 mA corresponding to 1Mvar <sup>1)</sup>
Output end value	20 mA	20 mA corresponding to 2Mvar <sup>1)</sup>
Output lower limit	4 mA	4 mA
Output upper limit	21.5 mA	20 mA must be equal to end value <sup>1)</sup>
Auxiliary voltage	110 V DC	230 V AC

1) As the transducer for measurement of reactive power is configured at 50 % var in proportion to the active power, the function "dual slope" is activated. This method can be used to ensure that the dynamic range of the current input is not exceeded on the var transducer.

2) At coupling 1W4/1var4 L-L voltage must be stated when ordering.

Check of the chosen measuring range is within the configuration range of the transducer.

$$0.375 \text{ A} = < \frac{\text{Primary power}}{1.73 \times \text{measuring voltage} \times \text{Vt ratio} \times \text{Ct ratio}} = < 6 \text{ A}$$

At 1W/1var coupling, the factor 1.73 is left out of the above calculation.

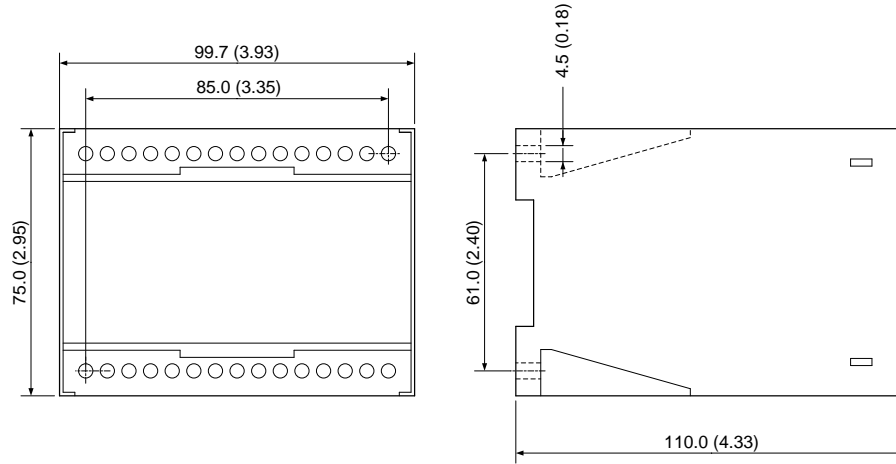
If I (current) is beyond 0.375 A...6 A, another Ct with a larger or smaller ratio is chosen.

### 1.1.8 Accessories

Please order separately:

- PC configuration kit containing connection cable and software for customer configuration
- Extra labels

### 1.1.9 Dimensions in mm (inches)



### 1.1.10 Mounting instructions

The transducer is designed for panel mounting, being mounted in a 35 mm DIN rail, or by means of two 4 mm screws.

The design of the transducer makes mounting of it close to similar equipment possible, however make sure that there is min. 50 mm between the top and bottom of the transducer and other equipment. The DIN rail must always be placed horizontally when several transducers are mounted on the same rail.

### 1.1.11 Disclaimer

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