

## MEASURING TRANSDUCER MODULE

Type: WAXA (Watt) - Active power  
Type: WRxA (VAr) - Reactive power

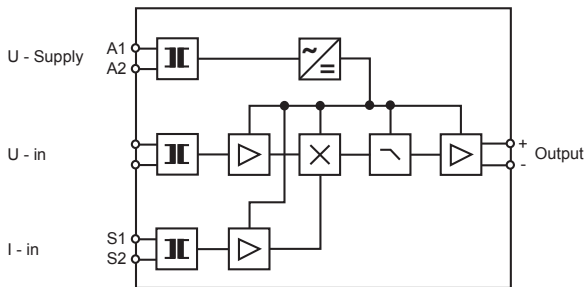
### FEATURES

- Small outlines
- High input sensitivity
- Low response time
- Excellent linearity
- 19 outputs available
- According to EN60688

### Description:

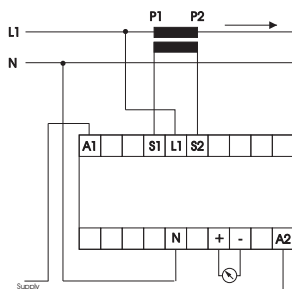
The input transformers for voltage and current separate the inputs galvanically from the converter. The signals are amplified to suitable levels and led to the multiplier. The multiplication is made by changing the voltage signal to a pulse-width modulated square wave, and the current to a voltage signal representing the amplitude of the current, thus giving a pulse area equal to the actual momentary power. Using a high frequency for the square pulses ensures an accurate measurement even with a high level of signal distortion (higher harmonics). The signal from the multiplier passes an active filter and an output circuit to ensure a low ripple and stable output signal. Output signals are short-circuit and open-circuit protected.

### FUNCTION DIAGRAM

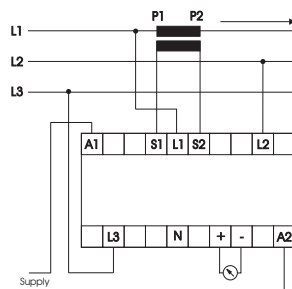


### CONNECTION DIAGRAM

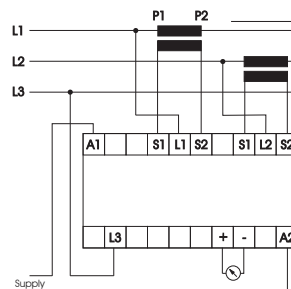
Rail mounting



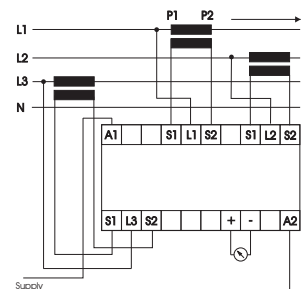
WAAA



WABA & WRBA



WACA & WRCA



WADA & WRDA

## SPECIFICATIONS

### INPUT

Nominal voltage Specify from 100 to 700 V  
 Max. input  $1.2 \times U_N$   
 Input resistance  $300 \text{ k}\Omega$   $U_{in} < 200 \text{ V}$   
 $500 \text{ k}\Omega$   $U_{in} > 200 \text{ V}$

Current  
 Nominal current 1 A (from .../1 A current transformer)  
 Or 5 A (from .../5 A current transformer)  
 Max. input  $1.2 \times I_N$  constant  
 Type .../1 A  $5 \times I_N$  for 10 sec.  
 Type .../5 A  $50 \times I_N$  for 1 sec.  
 Input resistance  
 Type .../1 A 50 m $\Omega$   
 Type .../5 A 5 m $\Omega$

### PERFORMANCE PARAMETERS

**TIMING**  
 Response time < 200 msec.

**ELECTRICAL**  
 Precision Class 0.5  
 Linearity < 0.1 %  
 Supply dependence <  $\pm 0.01 \%$  / %  $\Delta U$  supply  
 Temp. dependence <  $\pm 0.02 \%$  /  $^\circ\text{C}$   
 Ripple < 1 % pp

### OUTPUT

All output types are protected against short-circuit and open-circuit. Max. loads for accurate operation are shown in ordering information.

### SUPPLY

AC supply range with transformer 24 V (From 20 to 28 V)  
 110 V (From 99 to 140 V)  
 230 V (From 198 to 264 V)  
 400 V (From 342 to 484 V)

AC frequency range 45 to 440 Hz  
 Power consumption 4 VA, 2 W

### GENERAL

Temperature range -25  $^\circ\text{C}$  to +55  $^\circ\text{C}$   
 Humidity Up to 90 % RH non-condensing  
 Dielectric test voltage Input to AC supply 4000 VAC  
 Output to AC supply 4000 VAC  
 Input to output 3000 VAC  
 Weight 0.25 kg



International Standards

EMC directive 89/336: EN50081 - Emission  
 EN50082 - Immunity  
 Low voltage directive 73/23: EN60255 - Electrical Relays  
 EN60688 - Measuring transducer

### CHOISE OF CURRENT TRANSFORMER

1 - phase:  $\frac{\text{Watt (or VAR)}}{U \text{ (nom. voltage)} \times \cos \varphi} = \text{current}$

3 - phase:  $\frac{\text{Watt (or VAR)}}{U \text{ (nom. voltage)} \times \cos \varphi} \times 0.577 = \text{current in one phase}$

Chose your current transformer to the next standard above.

### Standard tranducer:

Full output  $U_{nom.} \times 1 \text{ (nom. current)} \times 1 \text{ (} \cos \varphi = 1 \text{)}$

Calculation of full output in Watt:

1 - phase:  $U_{nom.} \times 1 \text{ (nom. current)} \times 1 \text{ (} \cos \varphi = 1 \text{)}$

3 - phase:  $U_{nom.} \times 1 \text{ (nom. current)} \times 1 \text{ (} \cos \varphi = 1 \text{)} \times \sqrt{3}$

## ORDERING INFORMATION

### EXAMPLE:

**TYPE**  
 Power measuring transducer

Active power  
 Reactive power

1 - phase (only active power)  
 3 - phase 3 & 4 wire symmetrical load  
 3 - phase 3 wire asymmetrical load ("Aron" coupling)  
 3 - phase 3 & 4 wire asymmetrical load

### LOAD (Watt - VAR)

The first three figures of the load in Watt or VAR, e.g. 250 kW

Followed by:

2 for W / VAR = 100 to 999  
 3 for W / VAR = 1k to 9.9  
 4 for W / VAR = 10k to 99.9  
 5 for W / VAR = 100k to 999  
 6 for W / VAR = 1M00 to 9.99

### VOLTAGE BETWEEN PHASES

#### SINGLE PHASE - PHASE VOLTAGE

The first three figures of the voltage in Volt, e.g. 400 V

Followed by:

2 for V = 100 to 999

### CURRENT TRANSFORMER PRIMARY NOMINAL

The first three figures of the current in Ampere, e.g. 200 A

Followed by:

#### CURRENT WITH .../1 A.

0 for A = 1.00 to 9.99  
 1 for A = 10.0 to 99.9  
 2 for A = 100 to 999  
 3 for A = 1k to 9.99k

#### CURRENT WITH .../5 A.

4 for A = 1.00 to 9.99  
 5 for A = 10.0 to 99.9  
 6 for A = 100 to 999  
 7 for A = 1k to 9.99k

### FREQUENCY e.g. 50Hz

50Hz

60Hz

### OUTPUT SPECIFICATION

	Min. k $\Omega$	Max. k $\Omega$	
0 to $\pm 1$ V	0.1		A
0 to $\pm 2.5$ V	0.1	0.25	B
0 to $\pm 5$ V	0.5		C
0 to $\pm 7.5$ V	0.5	0.75	D
0 to $\pm 10$ V	1		E
0.2 to 1 V	0.1		F
0.5 to 2.5 V	0.25		G
1 to 5 V	0.5		H
2 to 10 V	1		I
0 to $\pm 1$ mA		10	J
0 to $\pm 2.5$ mA		2.5	K
0 to $\pm 5$ mA		2	L
0 to $\pm 10$ mA		1	M
0 to $\pm 20$ mA		0.5	N
0.2 to 1 mA		10	O
0.5 to 2.5 mA		2.5	P
1 to 5 mA		2	Q
2 to 10 mA		1	R
4 to 20 mA		0.5	S

### SUPPLY VOLTAGE

From 20 to 28 VAC  
 From 99 to 140 VAC  
 From 198 to 264 VAC  
 From 342 to 484 VAC

### HOUSING

Rail mounting VOX 55mm

