

MEASURING TRANSDUCER MODULE

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

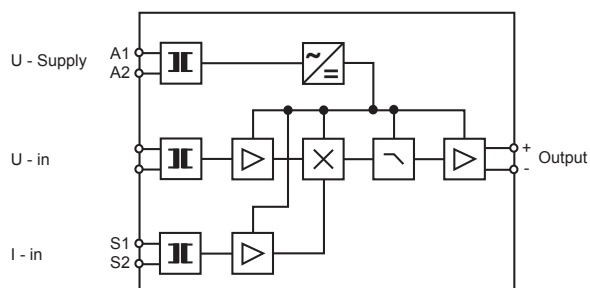
FEATURES

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

Description:

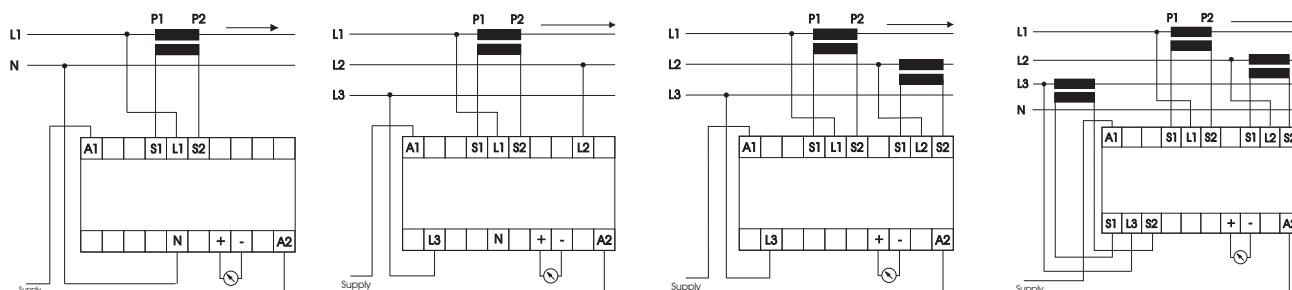
The input transformers for voltage and current separate the inputs galvanically from the converter. The signals are amplified to suitable levels and led to the multiplier. The multiplication is made by changing the voltage signal to a pulse-width modulated square wave, and the current to a voltage signal 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 kΩ $U_{in} < 200$ V
 500 kΩ $U_{in} > 200$ 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 50 mΩ
 Type .../1 A
 Type .../5 A 5 mΩ

PERFORMANCE PARAMETERS

TIMING

Response time < 200 msec.

ELECTRICAL

Precision Class 0.5
 Linearity < 0.1 %
 Supply dependence < ± 0.01 % / % ΔU supply
 Temp. dependence < ± 0.02 % / °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 24 V (From 20 to 28 V)
 with transformer 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 °C to +55 °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

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

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

Chose your current transformer to the next standard above.

Standard tranducer:

Full output $U_{nom.} \times 1$ (nom. current) $\times 1$ ($\cos \varphi = 1$)
 Calculation of full output in Watt:
 1 - phase: $U_{nom.} \times 1$ (nom. current) $\times 1$ ($\cos \varphi = 1$)
 3 - phase: $U_{nom.} \times 1$ (nom. current) $\times 1$ ($\cos \varphi = 1$) $\times \sqrt{3}$

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

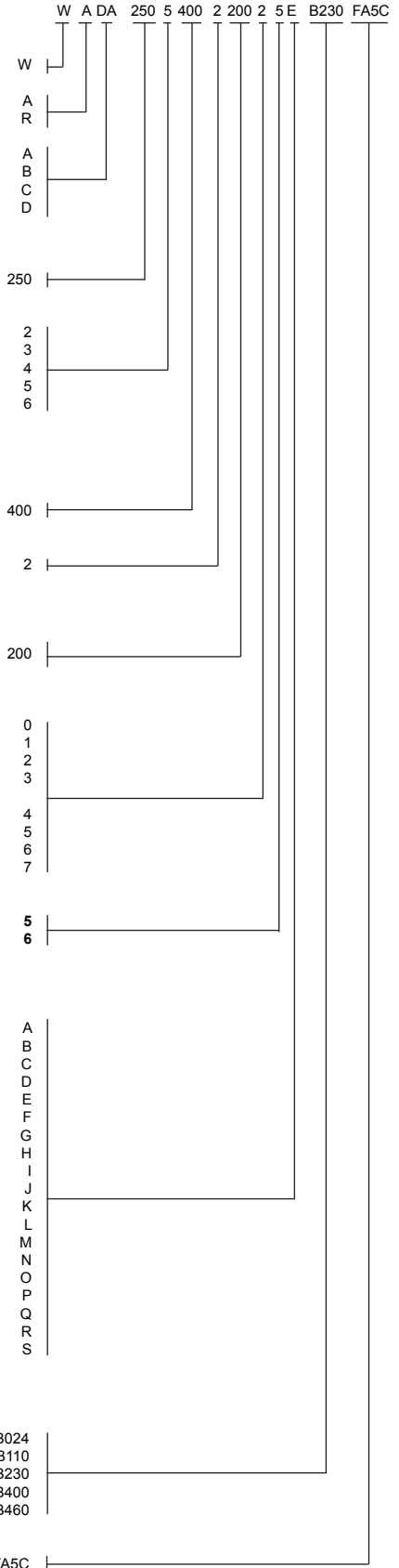
	Min. k Ω	Max. k Ω	
0 to ± 1 V	0.1		A
0 to ± 2.5 V		0.25	B
0 to ± 5 V	0.5		C
0 to ± 7.5 V		0.75	D
0 to ± 10 V	1		E
0.2 to 1 V	0.1		F
0.5 to 2.5 V	0.25		G
1 to 5 V	0.5		H
2 to 10 V	1		I
0 to ± 1 mA		10	J
0 to ± 2.5 mA		2.5	K
0 to ± 5 mA		2	L
0 to ± 10 mA		1	M
0 to ± 20 mA		0.5	N
0.2 to 1 mA		10	O
0.5 to 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

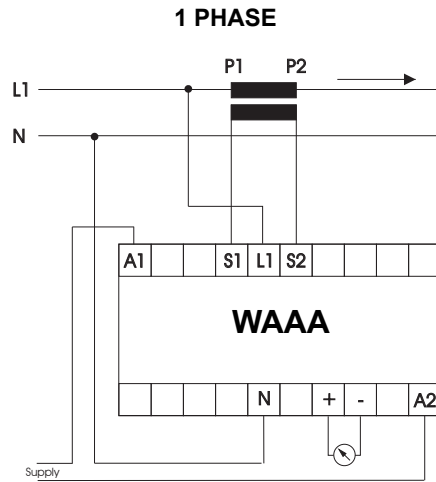
From 20 to 28 VAC
 From 99 to 140 VAC
 From 198 to 264 VAC
 From 342 to 484 VAC
 From 352 to 576 VAC

HOUSING

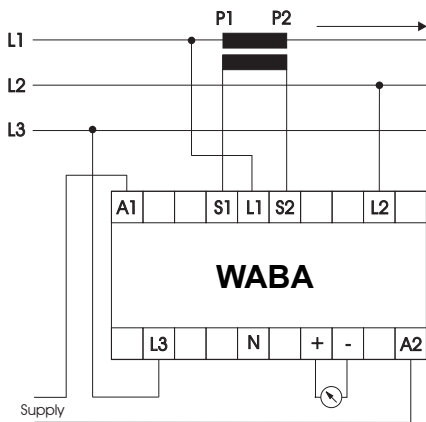
Rail mounting VOX 55mm



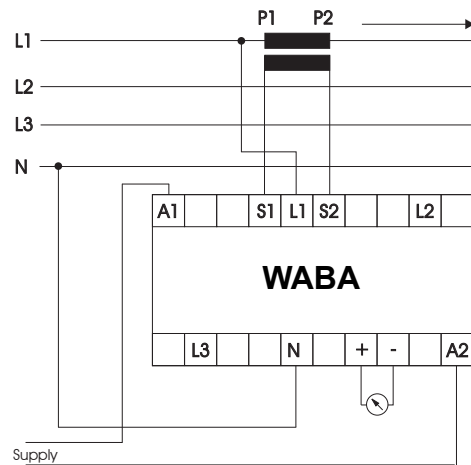
COUPLINGS FOR MEASURING ACTIVE POWER



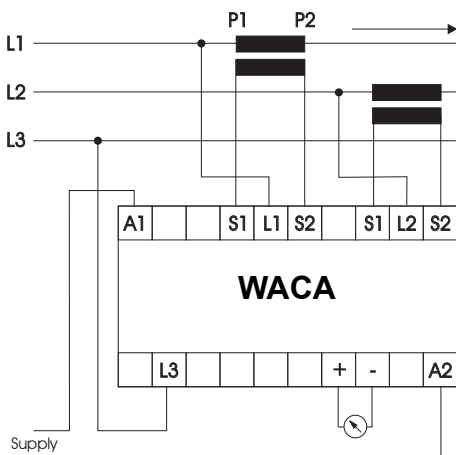
**3 PHASE, 3 WIRE
SYMMETRICAL LOAD**



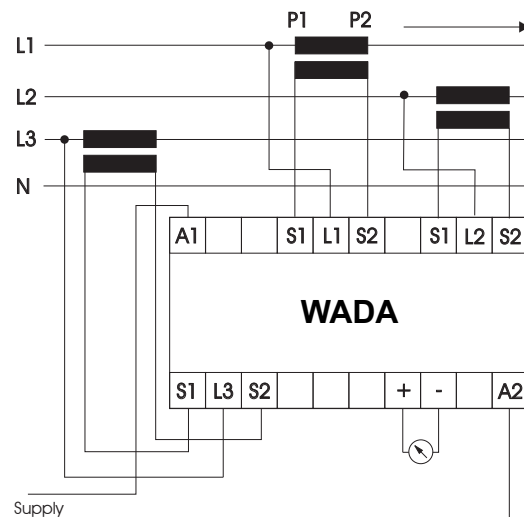
**3 PHASE, 4 WIRE
SYMMETRICAL LOAD**



**3 PHASE, 3 WIRE
ASYMMETRICAL LOAD**

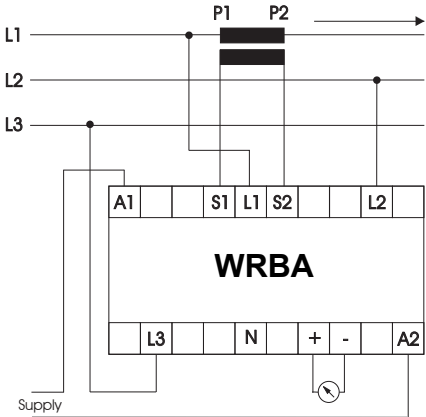


**3 PHASE, 3 or 4 WIRE
ASYMMETRICAL LOAD**

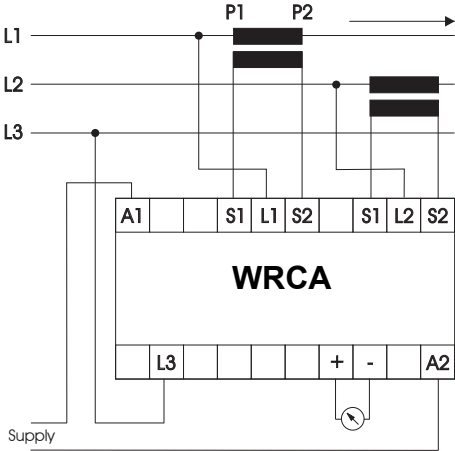


COUPLINGS FOR MEASURING REACTIVE POWER

**3 PHASE, 3 or 4 WIRE
SYMMETRICAL LOAD**



**3 PHASE, 3 WIRE
ASYMMETRICAL LOAD**



**3 PHASE, 4 WIRE
ASYMMETRICAL LOAD**

