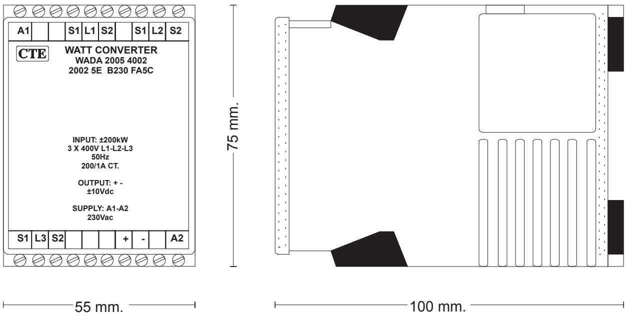


MEASURING TRANSDUCER MODULE

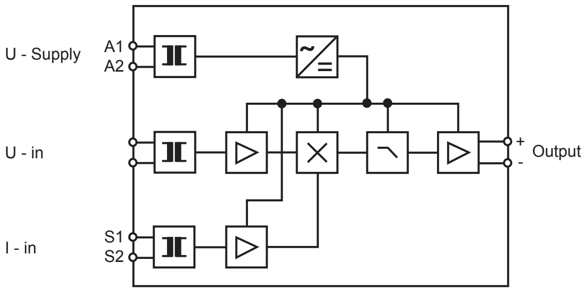
Type: WAxA (Watt) - Active power
Type: WRxA (VAr) - Reactive power

FEATURES

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

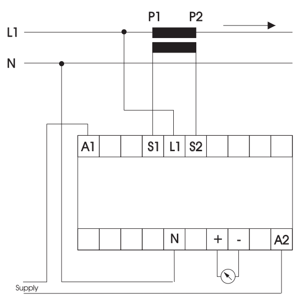
Description:
The input transformers for voltage and current separate the inputs galvanically from the converter. The signals are amplified to suitable levels and led to the multiplier. The multiplication is made by changing the voltage signal to a pulse-width modulated square wave, and the current to 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

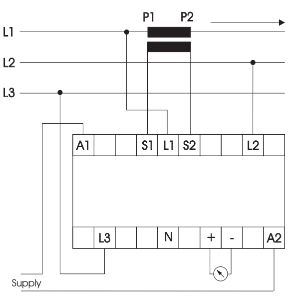


CONNECTION DIAGRAM

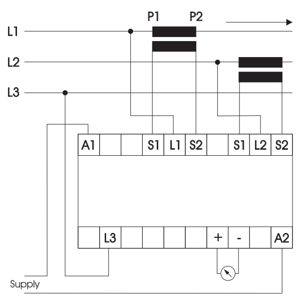
Rail mounting



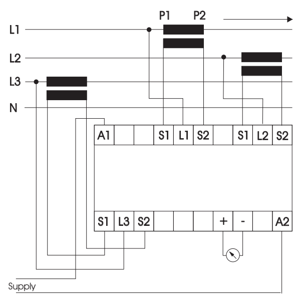
WAAA



WABA & WRBA



WACA & WRCA



WADA & WRDA

Thiim A/S
Transformervej 31
2730 Herlev - Denmark
Tel.: +45 4485 8000
Fax: +45 4485 8005
Web: www.thiim.com
Webshop: shop.thiim.com

SPECIFICATIONS

INPUT

Nominal voltage	Specify from 100 to 700 V
Max. input	1.2 x U_N
Input resistance	300 kΩ Uin < 200 V
	500 kΩ Uin > 200 V
Current	
Nominal current	1 A (from .../1 A current transformer)
Or	5 A (from .../5 A current transformer)
Max. input	1.2 x I_N constant
Type .../1 A	5 x I_N for 10 sec.
Type .../5 A	50 x I_N for 1 sec.
Input resistance	
Type .../1 A	50 mΩ
Type .../5 A	5 mΩ

PERFORMANCE PARAMETERS

TIMING	
Response time	< 200 msec.
ELECTRICAL	
Precision	Class 0.5
Linearity	< 0.1 %
Supply dependence	< ± 0.01 % / % ∆U 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 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 °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	

CE

	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: $\frac{\text{Watt (or VAr)}}{\text{U (nom. voltage) x cos }\varphi}$ = current

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

Chose your current transformer to the next standard above.

Standard tranducer:
Full output Unom. x 1 (nom. current) x 1 (cos φ = 1)
Calculation of full output in Watt:
1 - phase: Unom. x 1 (nom. current) x 1 (cos φ = 1)
3 - phase: Unom. x 1 (nom. current) x 1 (cos φ = 1) x √3

ORDERING INFORMATION

EXAMPLE: W A DA 250 5 400 2 200 2 5 E B230 FA5C

TYPE

Power measuring transducer	W
Active power	A
Reactive power	R
1 - phase (only active power)	A
3 - phase 3 & 4 wire symmetrical load	B
3 - phase 3 wire asymmetrical load ("Aron" coupling)	C
3 - phase 3 & 4 wire asymmetrical load	D

LOAD (Watt - VAr)

The first three figures of the load in Watt or VAr, e.g. 250 kW	250
Followed by:	
2 for W / VAr = 100 to 999	2
3 for W / VAr = 1k to 9.9	3
4 for W / VAr = 10k to 99.9	4
5 for W / VAr = 100k to 999	5
6 for W / VAr = 1M00 to 9.99	6

VOLTAGE BETWEEN PHASES
SINGLE PHASE - PHASE VOLTAGE

The first three figures of the voltage in Volt, e.g. 400 V	400
Followed by:	
2 for V = 100 to 999	2

CURRENT TRANSFORMER PRIMARY NOMINAL

The first three figures of the current in Ampere, e.g. 200 A	200
Followed by:	
CURRENT WITH .../1 A.	
0 for A = 1.00 to 9.99	0
1 for A = 10.0 to 99.9	1
2 for A = 100 to 999	2
3 for A = 1k to 9.99k	3
CURRENT WITH .../5 A.	
4 for A = 1.00 to 9.99	4
5 for A = 10.0 to 99.9	5
6 for A = 100 to 999	6
7 for A = 1k to 9.99k	7

FREQUENCY e.g. 50Hz

50Hz	**5**
60Hz	**6**

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

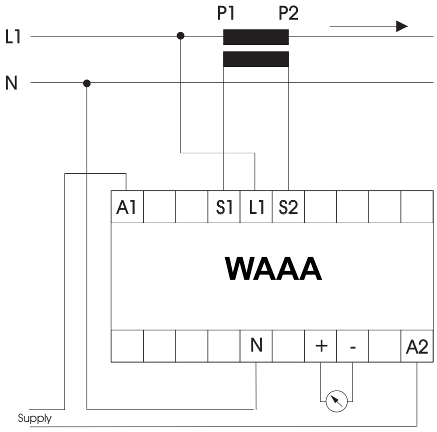
From 20 to 28 VAC	B024
From 99 to 140 VAC	B110
From 198 to 264 VAC	B230
From 342 to 484 VAC	B400

HOUSING

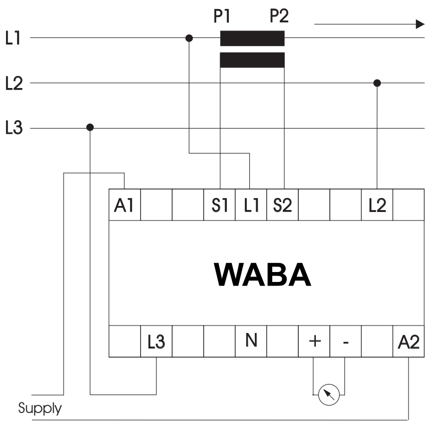
Rail mounting VOX 55mm	FA5C

COUPLINGS FOR MEASURING ACTIVE POWER

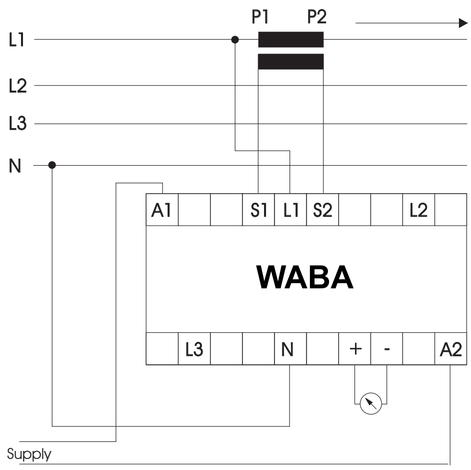
1 PHASE



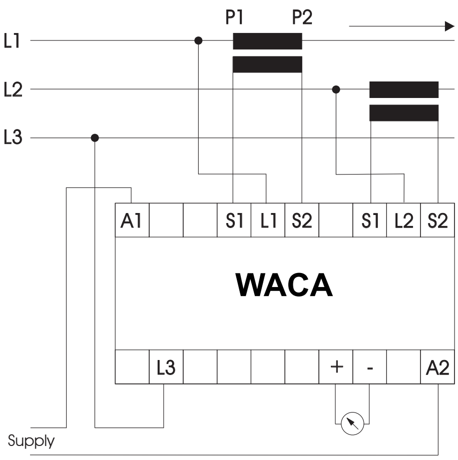
3 PHASE, 3 WIRE SYMMETRICAL LOAD



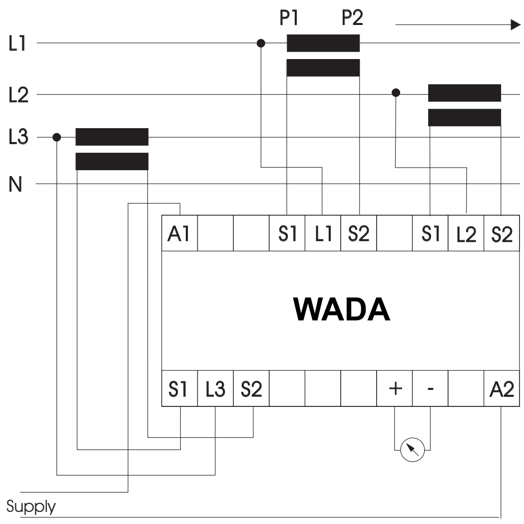
3 PHASE, 4 WIRE SYMMETRICAL LOAD



3 PHASE, 3 WIRE ASYMMETRICAL LOAD

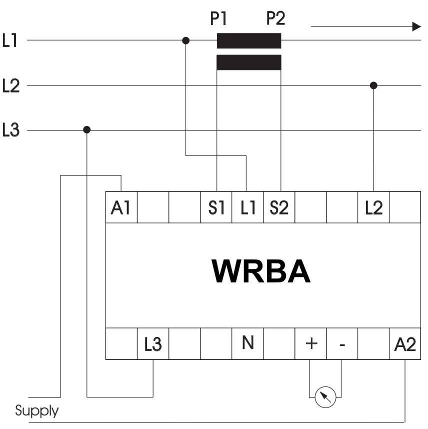


3 PHASE, 3 or 4 WIRE ASYMMETRICAL LOAD

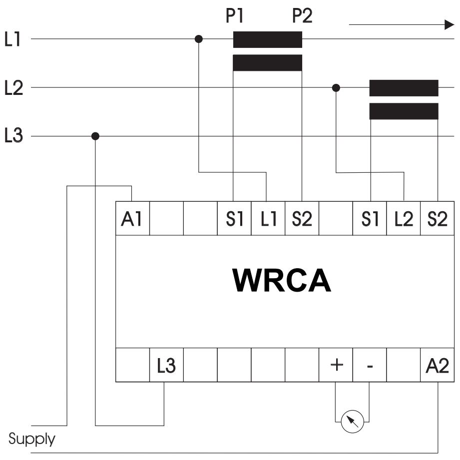


COUPLINGS FOR MEASURING REACTIVE POWER

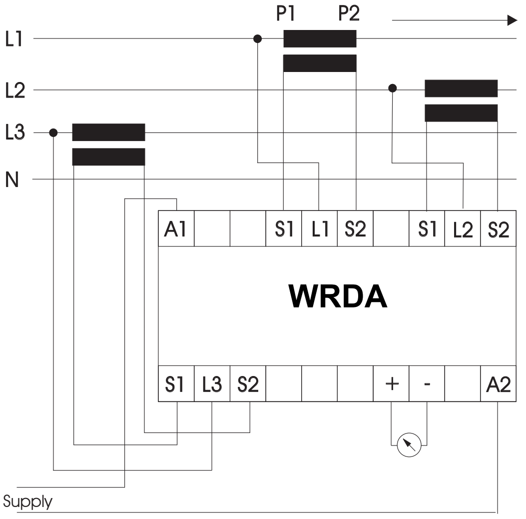
3 PHASE, 3 or 4 WIRE
SYMMETRICAL LOAD



3 PHASE, 3 WIRE
ASYMMETRICAL LOAD



3 PHASE, 4 WIRE
ASYMMETRICAL LOAD



We reserve right to make changes for product improvement.