WATT CONVERTER
CTE
WADA 2005 4002
2002 5E B230 FA5C

INPUT: ±200kW
3 X 400V L1-L2-L3
50Hz
200/1A CT.

OUTPUT: + -
±10Vdc

SUPPLY: A1-A2
230Vac

A1 S1 L1 S2 S1 L2 S2
S1 L3 S2 + - A2

75 mm.

55 mm.

100 mm.

C. THiiM

MEASURING TRANSDUCER MODULE

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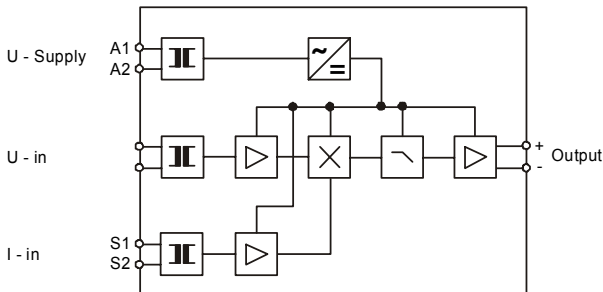Type: WRxA (VAr) - Reactive power

FEATURES

*   **Small outlines**

*   **High input sensitivity**

*   **Low response time**

*   **Excellent linearity**

*   **19 outputs available**

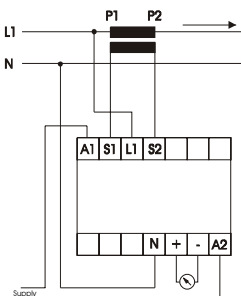*   **According to EN60688**

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.
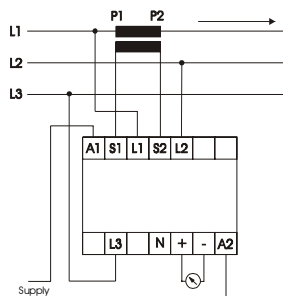
FUNCTION DIAGRAM

U - Supply   A1
              A2

U - in

I - in   S1
              S2

+ Output
-

CONNECTION DIAGRAM
Rail mounting

WAAA   WABA & WRBA   WACA & WRCA   WADA & WRDA

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C. Thiim A/S

31 Transformervej
2730 Herlev, Denmark

Tel.: +45 4485 8000
Fax: +45 4485 8005

Web: www.thiim.com
e-mail: thiim@thiim.com
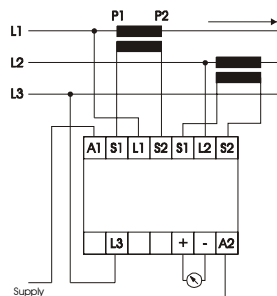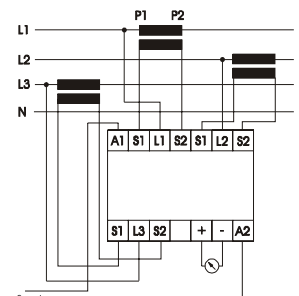
SPECIFICATIONS

INPUT

Nominal voltage	Specify from 100 to 700 V
Max. input	$1.2 \times U_N$
Input resistance	$300\,k\Omega$ Uin < 200 V
	$500\,k\Omega$ Uin > 200 V

Current

Nominal current	1 A (from .../1 A current transformer)
Or	5 A (from .../5 A current transformer)
Max. input	$1.2 \times I_N$ 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	< ± 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	

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: $\dfrac{Watt\ (or\ VAr)}{U\ (nom.\ voltage) \times \cos\varphi} = current$

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

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 D A 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

Range			Min. kΩ	Max. kΩ	Code
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

WADA.PMD - 0337