§ BOX TRANSDUCER § TYPE CODE DESIGNATION

TYPE CODE DESIGNATION

• SMALL SIZED AC TRANSDUCER

TT2-90A series (1) TT2 (2) A - (3)

(1) Kind of input

Mark	Kind of input		
A or AE	AC current		
V or VE	AC voltage		
W	AC power		
WV	Reactive power		
S	V-V phase angle		
Р	V-I phase angle		
SP	Power factor		
F	Frequency		

(2) Kind of outer case and its dimensions

Mal	Material	Dimensions (mm)	
Mark Material of outer case		${\rm Length} \times {\rm Width} \times {\rm Height}$	
91	Fire-retardant ABS resin	120×40×130	
92	Fire-retardant ABS resin	120×56×130	

(3) Kind of circuit

Mark	Kind of circuit		
12	Single phase 2 wire		
13	Single phase 3 wire		
33	3 phase 3 wire		
34	3 phase 4 wire		

• AC TRANSDUCER

TT2-80A series (1) TT2 (2) A (3) – (4)

(1) Kind of input

Mark	Kind of input	
AE	AC current	
VE	AC voltage	
W	AC power	
MDA	Maximum demand	
MDV	Maximum indication voltage	

Dielectric strength voltage AC2,000V (50/60Hz) for 1 min. between input and output

(2) Kind of outer case and its dimensions

Mark	Material of outer case	Dimensions (mm)	
Wark	material of outer case	${\rm Length} \times {\rm Width} \times {\rm Height}$	
82	Fire-retardant ABS resin	$120 \times 56 \times 130$	
83	Fire-retardant ABS resin	120×110×130	

3) For the use of cycle control

Mark	Kind		
No mark	General circuit		
С	Cycle control		

(4) Kind of circuit

Mark	Kind of circuit		
12	Single phase 2 wire		
13	Single phase 3 wire		
33	3 phase 3 wire		
34	3 phase 4 wire		

MAXIMUM DEMAND TRANSDUCER

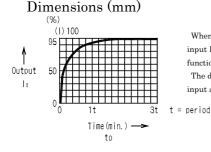
Standard specifications

Item	Specification				
Туре	MDATT2-83A				
Standard	In conformity with JIS C1111-1989				
Tolerance	±1%				
Input	1A, 5A (product range: 50-300A)				
Output	5V 10V 1-5V 1mA 4-20mA				
(load	(1k) $(2k)$ $(1k)$ $(10k)$ (500)				
resistance)					
Auxiliary	AC100/110V ± 15% (50/60Hz) 3VA				
supply	AC 200/220V ± 15% (50/60Hz) 3VA				
	DC 100/110V 6W				
Period	Time it takes to reach 95% (±2%) of final steady value				
	1 min, 3 min, 5 min,				
Warm-up	Times and becaused after the many mark is a				
time	Times equals period after the power was turned on.				
Output	10/ D.D main at antimut an an				
ripple	1% P-P against output span				
Influence of					
temperature	$23 \pm 20 \pm 1\%$				
Over current	Input 40 times 1 sec. 1.2 times continuity				
O	Auxiliary 1.5 times 10 sec. 1.2 times continuity				
Overvoltage	supply				
Insulation	Between input terminal/output terminal/auxiliary				
resistance	supply/outer case (earth)				
resistance	50M at DC500V				
Withstand	Between input terminal/output terminal/auxiliary				
voltage	supply/outer case (earth):				
voltage	AC2, 000V (50/60Hz) 1 min.				
Impulse	Between electric circuit and outer case (earth)				
withstand	5 kV 1.2/50 µs positive/negative polarity 3 times each				
voltage	on , 1.2.00ps positive negative polarity o times each				
Appearance	Black (munsell N1.5)				
color	Diack (munsell N1.5)				
Operating					
temperature/	-10-+55 , 30-85%RH				
humidity	10 - 55 , 50 65701411				
range					
Storage					
temperature	-40- + 70				
range					
Weight	Approx. 1.2kg				

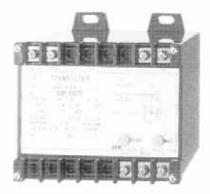
Option With peak-hold output

Item	Specifications			
Output	5V 10V 1-5V 1mA 4-20mA			
(load resistance)	(1k)(2k)(1k)(10k)(500)			
Power consumption (VA)	5VA			
Reset method	External switch			
Reset time	20ms			

Non-insulation between demand output and peak output terminals. (Minus common) Make sure to reset the device before use each time the power is turned on.



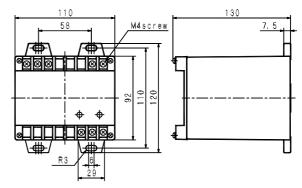
When applied continuously a constant input I, it operates according to exponential function and outputs Io. The device outputs the average value of input at 3t.



MDATT2-83A

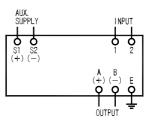
 $(120 \times 110 \times 130 \text{ mm}/1.2 \text{ kg})$

Dimensions (mm)

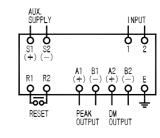


Connection diagram

Demand output only



🌑 W/ peak hold (option)



Purchase specifications

Г	ype	Input
0	Output	Load resistance
A	Auxiliary supply	
F	Period	Quantity

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 $I_0 = I(1 - e^{-3t/t_0})$

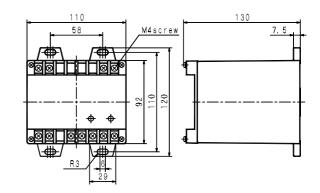
Standard specifications

	specifica					
Item	Specification					
Туре	MDVTT2-83A					
Standard	In conformity with JIS C1111-1989					
Tolerance	±1%					
Input	150V, 259V	7, 300V (pro	oduct	rang	e: 50-300V)	
Output	$5\mathrm{V}$	10V	1-53	7	1mA	4-20m A
(load	$\begin{array}{cccccccccccccccccccccccccccccccccccc$					
resistance)	(1K)	$(2\mathbf{K})$.) '	(IUK)	(500)
Reset	External s	witch (neal	z hol	doutr	uit)	
method				ս սուր	/ut/	
Reset time	20ms (peal					
Auxiliary	AC100/110				5VA	
supply	AC 200/22	0V ±15%	(50/6)	0Hz)	5VA	
supply	DC 100/11	0V 8W				
Response	0.2 sec.					
time	(time it tal	xes to reacl	n 90%	6 of fii	nal steady v	value)
Output	1% P-P	against out	nut c	non		
ripple	170112	igamsi oui	puts	pan		
Influence of	23 ± 20	±1%				
temperature	20 ± 20	± 170				
	Input		$2 ext{ ti}$	mes 1	0 sec. 1.2 ti	imes
Overvoltage	input			tinuit	0	
Overvoltage	Auxiliary s	unnly	1.5	times	s 10 sec. 1.2	times
				tinuit	<u>y</u>	
	Between e		iit ai	nd		
	outer case				 DC500V	50ΜΩ
	Between in			nd		
Insulation	output/res					
resistance	Between input/output/reset		et	megger		
	and auxilia	ary supply	term	inal		
	Between re	eset termin	al ar	nd		
	output					
	Between electric circuit and		and			
	outer case				AC2000V	
	Between i			and	(50/60Hz)	1
Withstand	output/res				1 min.	No
voltage	Between in					abnormality
	and auxilia					4
	Between re	eset termin	al ar	nd	AC500V	
	output				1min.	
	Between e				1.2/50µs	
Impulse	and outer o					No
withstand	Between input/ output/				abnormality	
voltage	0		polarity 3			
	supply terminal times each					
Appearance	Black (munsell N1.5)					
color	nonotuno/					
Operating temperature/ -10-+55 , 30-85%RH						
humidity range 10 + 55 + 50 857000 Storage temperature 40 + 70						
range	rature	-40- + 70				
Weight		Approx.	1.2kg	·		
<u> </u>						

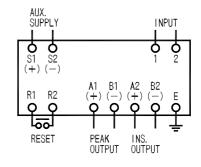


MDVTT2-83A (120 × 110 × 130mm/1.2kg)

Dimensions (mm)



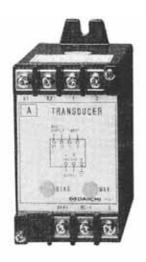
Connection diagram



Non-insulation (minus common) between instantaneous output and peak output terminals. Make sure to reset the device before use each time the power is turned on. As a special response, 0.1s/99% (only available during start-up) is manufacturable.

Purchase specifications

Туре	Input	Output	Load resistance
Auxiliary supply		Quantity	



AETT2-82AC (120 × 56 × 130mm/700g)

Use

When electric furnace is controlled by SCR (cyclic control), current/voltage and power fluctuate periodically and those can not be read by general indicating instrument or transducer.

This product can measure voltage/current and power in cycle control accurately and read them in stable condition. As those can be read by data logger, etc., this product can be used for cycle control measurement.

WTT2-83AC-33 (120 × 110 × 130mm/1.2kg)

Features

High reliability design.

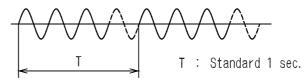
With stand voltage between input/ output/ auxiliary supply/ earth. 2000 V AC 50/60Hz 1 min.. Complete insulation.

With electrostatic shield between primary and secondary, equipment on output side can be protected from lightning surge, etc. on input side.

With output line surge protection (2,000A, $\pm 8/20 \ \mu s$), can transmit an output directly to a distant place.

Output operation is stable against cycle control input.

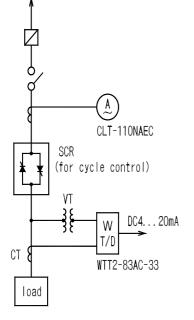
Cycle control waveform



Output comparison table against input continuity

Input	Output (%)										
Current/voltage continuity	Current/voltage	Power									
0.05(5%)	22.4	5.0									
0.25 (25%)	50.0	25.0									
0.5 (50%)	70.7	50.0									
0.75 (75%)	86.6	75.0									
1 (100%)	100.0	100.0									
Approximate	A (V) =	P=VI=									
formula	input × 100%	input × input × 100%									

Operating connection diagram



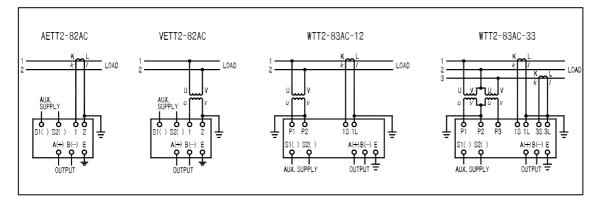
Specifications

			Requirement		ient of use					DC output	ц	Ri		Approximate VA consumption			
Product		Operation method	Cycle wave form	Voltage side	Current side	Frequency	Туре	Input		(load resistance)	Tolerance	Ripple (p-p)	Response (second) *3	Voltage side	Current side	Auxiliary supply	Weight
	AC	RN	Int 1			5(5Δ 10V (2k		10V(2k)			Rise: 5 sec				7
	AC current	RMS value	Interval 1 sec.			50/60Hz	AETT2-82AC			4-20mA	±1.0%	1%	Rise: 10sec		0.5	2	700g
	AC	RMS	Ir			50/				5V (1k) 10V (2k)	*1 ±1.0%		Rise: 5 sec			2	7
c.	AC voltage	RMS value	Interval 1 sec.			50/60Hz	VETT2-82AC	150V or	300V	4-20mA (500)		1%	Rise: 10 sec	1.0			700g
	Single phase	Hall	Int 1			50/60H z	WTT2-83AC-12	100V, 5A	500W	5V(1k) 10V(2k) 1-3-5V	*2		Rise: 10 sec		1/1		1.0kg
AC	igle ase AC	multip	Interval 1 sec.			: OH	WTT2-03AC-12	220V, 5A	1kW				ec	0.5/			kg
AC power	3-p	Hall multiplying method	1 Int	unba	unb	50		110V, 5A	1kW	(1k) 1mA(10k)	± 1.0%	1%	Rise: 10sec	0.5/ phase	1/ phase	1.5	
	3-phase	nethod	Interval 1 sec.	unbalance	unbalance	50/60Hz	WTT2-83AC-33	220V, 5A	2kW	4-12-20mA (500))		3C				1.2kg

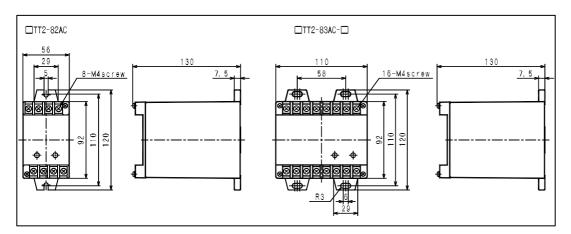
*1. In the case of less than 50% of rated output value, tolerance doubles. *2. In the case of less than 25% of rated output value, tolerance doubles.

*3. Time it takes to fall within 90% and 10% of final steady state value.

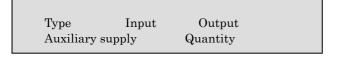
Connection diagram



Dimensions(mm) See above connection diagram for terminal arrangement.



Purchase specifications



AC SPECIAL TRANSDUCER INTEGRATING POWER/ REACTIVE POWER TRANSDUCER

INTEGRATING POWER TRANSDUCER WHP-83A-INTEGRATING REACTIVE POWER TRANSDUCER WVHP-83A-



WHP-83A-33

Use

This product converts power/reactive power of single phase/ 3-phase and 3-phase 4-wire to proportional pulse output/ analog output.

Features

- 1. Power/reactive power can be measured accurately in distorted wave.
- 2. Integrating power can be measured in short period of time such as 20-30 seconds.
- 3. Variety of pulse output signal method can be selected.
- 4. Product with analog output (option) can be manufactured. Analog output: with line surge (2,000A 8/20µs) protection and signal is outputted in remote place.
- 5. As output limiter circuit is equipped, output can be limited to approx. 1.5 times of rated value even at an excessive input.

Standard specifications

Item	Specifications									
Tolerance	% against output span									
Influence of	23 ± 20 tolerance %									
temperature	; 78									
Influence of frequency	45-65Hz tolerance	45-65Hz tolerance %								
Characteristic	In conformity with	JIS C1111-1989								
Response time	Time to be within ±	1% of constant output value when a stepped input of 90% output is applied.								
Output ripple	P-P against rated o	utput value 1% or less (analog output)								
External adjustment to	. =0/ 1: / / :	11								
output	± 5% adjustment is	s possible.								
Output limiter circuit	Limiting analog ou	tput (option) to approx. 1.5 times of rated value against an excessive input.								
Auxiliary supply	AC100/110 or AC20	00/220V ±15% (50/60Hz); DC24V ±15% ; DC110V (88-143V)								
O	input	2 times of rated voltage (10 sec.), 1.2 times (continuity)								
Overvoltage	Auxiliary supply	1.5 times of rated voltage (10 sec.), 1.2 times (continuity)								
Over current	Rated current: 40 t	imes (1 sec.), 20 times (4 sec.), 10 times (16 sec.), 1.2 times (continuity)								
	Between input/output/auxiliary supply and outer case (earth).									
Insulation resistance	Between pulse output terminal and analog output terminal (option) (Non-insulation between									
Insulation resistance	voltage output and analog output).									
	DC500V 50M Ω or more.									
	Between input/output/auxiliary supply and outer case (earth).									
With stars I and to be	Between pulse output terminal and analog output terminal (option) (Non-insulation between									
Withstand voltage	voltage output and analog output).									
	AC2, 000V (50/60Hz) 1min.									
Impulse withstand	Between electric circuit and outer case (earth).									
voltage	Between input/output/reset and auxiliary supply terminal.									
voltage	5kV 1.2/50µS; positive and negative polarity 3 times each.									
Appearance color	Black (munsell N1.	5)								
Operating temperature/	-10-+ 55 - 20 950/	PU (no condensation)								
humidity range	-10-+55 , 30-85%RH (no condensation)									
Storage temperature										
range	-40- + 70									

§ BOX TRANSDUCER §

AC SPECIAL TRANSDUCER INTEGRATING POWER/ REACTIVE POWER TRANSDUCER

Specifications

		Opers		Requireme	Requirement of use			Input	:	Output		Tole	rance	Resp (seco *3	oonse ond)	A consu	pproxima umption \	ite /A (W)	W												
	Product	Operation method	Cycle wave form	Voltage side	Current side	Frequency (50/60Hz)	Type	Rating	Second	Pulse output	Analog output	Pulse output	Analog output	Pulse output	Analog output	Voltage side	Current side	Auxiliary supply	Weight (kg)												
	Single					(7	WHP-	110V, 5A	500W							0															
	Single phase					50/60	WHP-83A-12	220V, 5A	1kW	Voltage						0.5	1		1.1												
INTE	Single phase 3-wire	Hal				50/60	WHP-83A-13	110V, 5A	1kW	Voltage 10Vp±10% (2KD or more) or Transistor open collector (DC48V/DC100mA MAX) or Photo MOS FET relay (DC48V DC100mA MAX)	5V (1kD or more), 10V (2kD or more), 1-5V (1kD or more), 1mA (10kD or less), 5mA (2kD or less), 4-20mA (525D or less)	5V (1kΩ or more),							1.3												
INTEGRATING POWER	3-phase	Hall multiplying method		unbala	unbalance	unbalance	50/60	WHP-83A-33	WHP-83A-33	WHP-83A-33	110V, 5A	1kW	more) or Trar	10V (2kΩ or m								1.3									
OWER	ase	lethod		ance	ance	60	33A-33				13A-33	13A-33	}3A-33	}3A-33	}3A-33	33A-33	}3A-33	3A-33	13A-33	13A-33	33A-33	33A-33	220V, 5A	2kW	isistor open c	nore), 1-5V (1					
	3-phas			Balanced (phase voltage) Positive phase sequence	unbalance	50/60	WHP-83A-34	110/ 3V, 5A	1kW	ollector (DC48V/D	kΩ or more), 1mA	±1%	± 0.5%	100mS + 1/fo *1	_			3.5 (2.0) *2	1.4												
	3-phase 4-wire		1	ase voltage) se sequence	nce	ince	Ince	Ince	ince	ance	ance	60	3A-34	220/ 3V, 5A	2kW	C100mA MAX.) or I	(10kΩ or less), 5m			fo*1		0.5/ phase	1/ phase	*2	4						
_	Single phase		Positive phase sequence		Balar Positive phas	Balanced Positive phase se	unbalance	50/60	55 AMA	WVH	WVH	100V, 5A	LAG 1kvar	Photo MOS FET r	A (2kΩ or less), 4								1.3								
NTEGRATING F	phase	Hall multiplying method		iced ie sequence	ance	60	WVHP-83A-33	9-83A-33	220V, 5A	LAG 2kvar	relay (DC48V D0	-20mA (525Ω or								ω											
INTEGRATING REACTIVE POWER	3-phase 4-wire		,	Balanced (line) Positive phase sequence	unbalance	50/60	WVHP-83A-34	110V, 5A	LAG 1kvar	C100mA MAX)	less).								1.4												
	4-wire			t (line) > sequence	nce	0	3A-34	220V, 5A	LAG 2kvar																						

*1. fo: output frequency

*2. AC 4.5VA, DC 2.5W in the case of a product with analog output (option) .

Product range

Item			Rating	Pulse output	Analog output					
10	em	Second power	voltage	current	frequency	r uise output	(option)			
Integrating power	Single phase	225-600W (110V, 5A) 450-1,200W (220V, 5A)		AC0.1-5V	45-65Hz					
	Single phase 3-wire	0.25-1.2kW (110V, 5A)	AC50-240V			0.01667-277.8pps (60-1,000, 000plse/h)				
	3-phase	0.25-1.2kW (110V, 5A) 0.5-2.4kW (220V, 5A)					DC0.1-10V DC0.1-20mA			
	3-phase 4-wire	0.25-1.2kW (110/ 3V, 5A) 0.5-2.4kW (220/ 3V, 5A)	AC50-240V				Minus output is not manufacturable.			
Intomating	3-phase	LAG0.25-1.2kvar								
Integrating reactive power	3-phase 4-wire	(110V, 5A) LAG0.5-2.4kvar (220V, 5A)	AC50-240V							

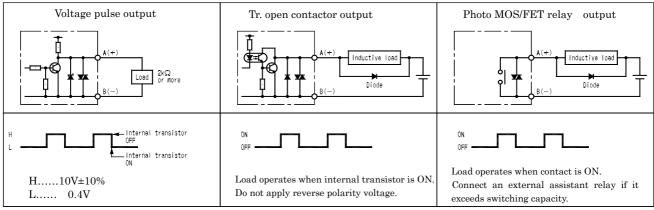
* Values in this table are Max. Values (except frequency).

Example: DC0.1-10V: From min. 0-0.1V to max. 0-10V can be manufactured.

§ BOX TRANSDUCER §

AC SPECIAL TRANSDUCER INTEGRATING POWER/ REACTIVE POWER TRANSDUCER

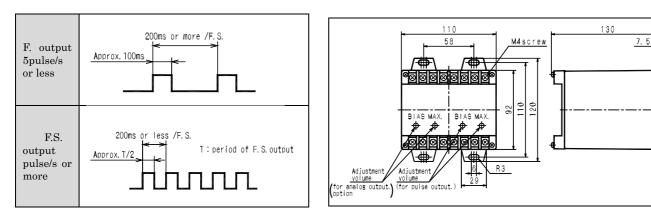
Pulse output ((Specify any one of the following)



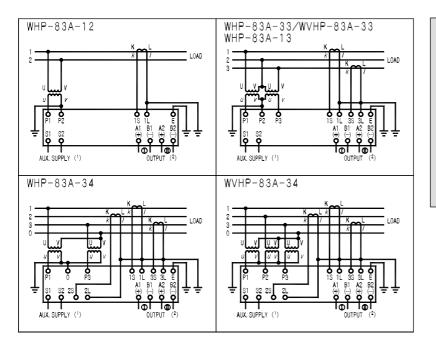
Dimensions(mm)

* When inductive load such as electromagnetic relay is connected to output contact, installation of diode around load is recommended.

Pulse output width (standard: 100ms)



Connection diagram



Purchase specifications

See connection diagram for

terminal arrangement.

Type Max. input power Rating (voltage/current/VT ratio/CT ratio/frequency) Pulse constant Pulse output signal method Option (with analog output, terminal cover) auxiliary supply no. of unit

- (1) In the case of DC power source: S1 (+), S2 () .
- (2) OUTPUT is analog output (option), OUTPUT is pulse output. Output notation of standard product without analog output (option) is indicated as OUTPUT