

# Power Transducer

(GP Series)



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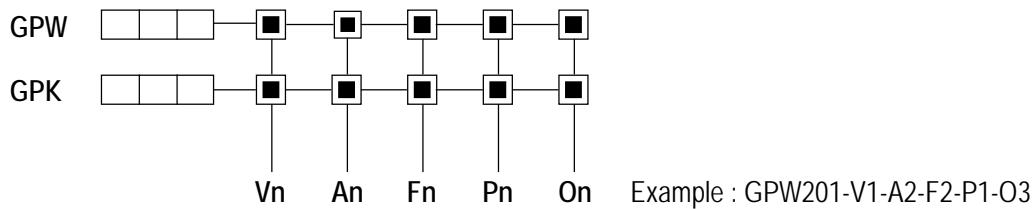
## ***CONTENTS***

GPW / GPK	Watt Transducer, Var Transducer	1
GPWWH / GPKKH	Watt Watthour Transducer, Var Varhour Transducer	3
GPWH / GPKH	Watthour Transducer, Varhour Transducer	5
GPWK	Watt / Var Transducer	7
GPV / GPVS / GPVR / GPV2	Voltage Transducer	9
GPA / GPAS / GPAR / GPA2	Current Transducer	9
GPVX / GPVXS / GPVX2	3 Voltage Transducer	9
GPAX / GPAXS / GPAX2	3 Current Transducer	9
GPPF	Power Factor ( $\cos\phi$ ) Transducer	11
GPPL	Phase Angle Transducer	13
GPF	Power Frequency Transducer	15
DIMENSION		17

# WATT & VAR TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



Connection	Model	Standard analog calibration			<b>Note :</b> Voltage input : Phase voltage for 3 phase 4 wire (Vp) Line to line voltage for 3 phase 3 wire (VL)
			1A	5A	
1 Phase 2 Wire	GPW101	V1 = 120V	100	500	
		V2 = 240V	200	1K	
		V3 = 415V	400	1.5K	
3 Phase 3 Wire Balance	GPW200	V1 = VL = 120V	100	500	
	GPK200	V2 = VL = 240V	200	1K	
		V3 = VL = 415V	400	1.5K	
3 Phase 3 Wire Unbalance	GPW201	V1 = VL = 120V	200	1K	
	GPK201	V2 = VL = 240V	400	2K	
		V3 = VL = 415V	800	4K	
3 Phase 4 Wire Balance	GPW300	V1 = VL = 120V	100	500	
	GPK300	V2 = VL = 240V	200	1K	
		V3 = VL = 415V	400	1.5K	
3 Phase 4 Wire Unbalance	GPW301	V0 = Vp = 69.3V	200	1K	
	GPK301	V1 = Vp = 120V	300	1.5K	
		V2 = Vp = 240V	600	3K	
		V3 = Vp = 415V	1.2K	6K	

## Input & output parameters

Vn : Voltage input	Vn rating range	V0 69.3 V 45~86 V	V1 120 V 85~150 V	V2 240 V 180~300 V	V3 415 V 300~500 V	Own : Watt output		Okn : Var output
						O1 0~1 mA	O2 0~20 mA	O3 (uni.) 4~20 mA
An : Current input	An rating range	A1 1 A 0~1.2 A	A2 5 A 0~6 A			O4 (bi.) 4~12~20 mA	O5 0~10 mA	O6 0~1 V
						O7 0~5 V	O8 0~10 V	O9 2~10 V
Fn : Frequency input	Fn rating range	F1 50 Hz 48~52 Hz	F2 60 Hz 58~62 Hz			O10 (uni.) 1~5 V	O11 (bi.) 1~3~5 V	
Pn : Auxiliary power input	Pn rating	P1 120 V	P2 240 V	Py Internal powered / DC powered order on request				

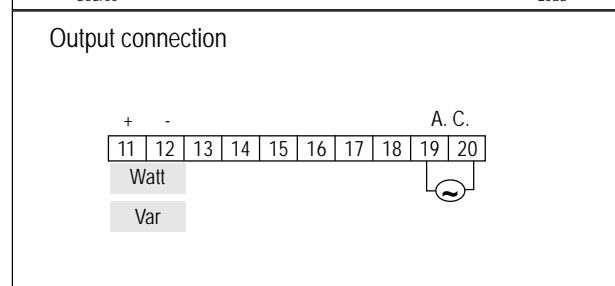
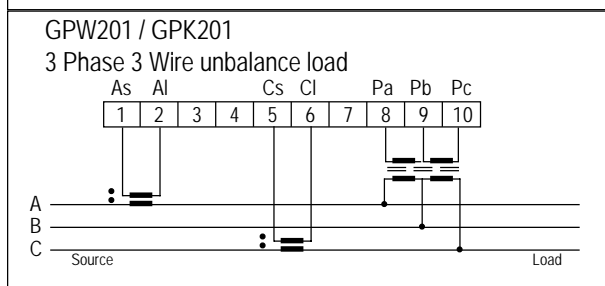
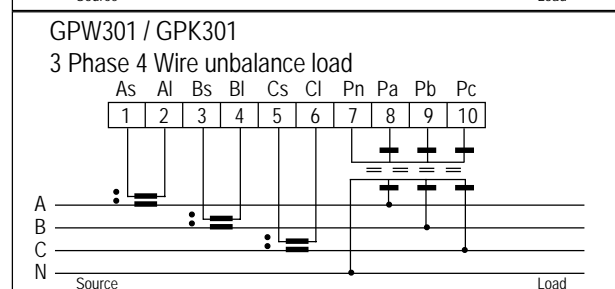
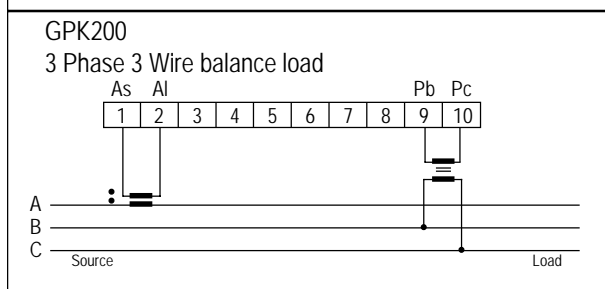
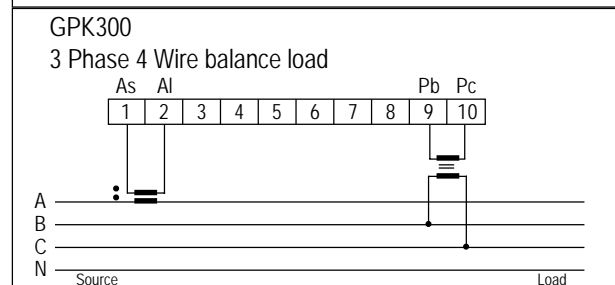
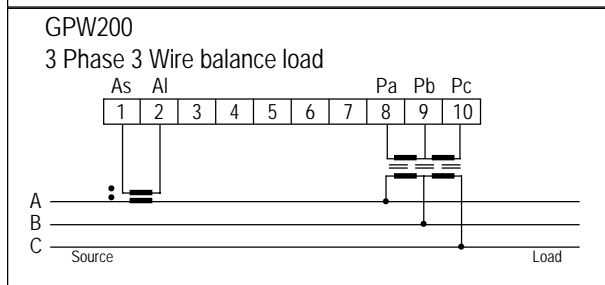
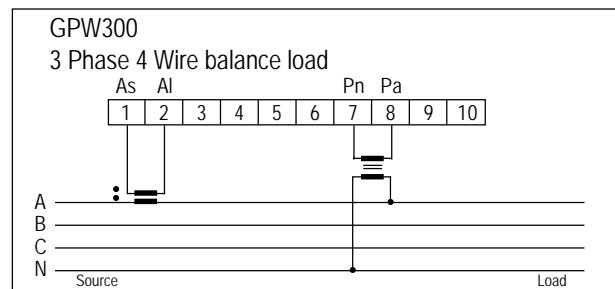
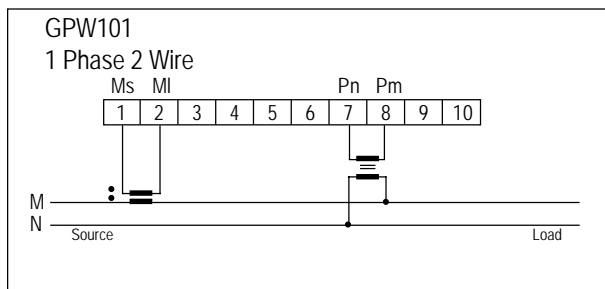
### Note :

1. uni. = uni-direction = 0 to +span                      bi = bi-direction = -span to 0 to +span  
 Example : 4-20mA = 0 to +1000W                      4-12-20mA = -1000W to 0 to +1000W
2. For uni-directional transducers watts for forward power and vars for lagging power
3. For internal powered type ... zero based outputs and Vn operation range 85%~115%

## Specification

Accuracy ( 23 ± 5°C )	0.5% ro
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	Current 0.3VA typically; voltage 0.2VA typically
Frequency	50 ± 2Hz, 60 ± 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : max. 2 x rated continuous ( 120V / 240V ), max. 1.5 x rated continuous ( 415V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 50 / 60Hz, < 3.5W

## Terminals Connection

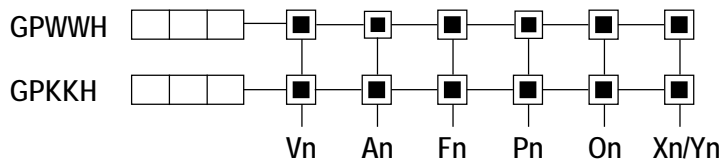


**Note :** 1. A.C. : Auxiliary AC power  
2. Terminal 19 (+), 20 (-) for DC power option

# WATT/WATTHOUR & VAR/VARHOUR TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



Example : GPWWH201-V1-A2-F2-P1-O3-X1

Connection	Model	Standard analog calibration			<b>Note :</b> Voltage input : Phase voltage for 3 phase 4 wire (Vp) Line to line voltage for 3 phase 3 wire (VL)
			1A	5A	
1 Phase 2 Wire	GPWWH101	V1 = 120V V2 = 240V V3 = 415V	100 200 400	500 1K 1.5K	
3 Phase 3 Wire Balance	GPWWH200	V1 = VL = 120V	100	500	
	GPKKH200	V2 = VL = 240V V3 = VL = 415V	200 400	1K 1.5K	
3 Phase 3 Wire Unbalance	GPWWH201	V1 = VL = 120V	200	1K	
	GPKKH201	V2 = VL = 240V V3 = VL = 415V	400 800	2K 4K	
3 Phase 4 Wire Balance	GPWWH300	V1 = VL = 120V	100	500	
	GPKKH300	V2 = VL = 240V V3 = VL = 415V	200 400	1K 1.5K	
3 Phase 4 Wire Unbalance	GPWWH301	V0 = VP = 69.3V V1 = VP = 120V	200 300	1K 1.5K	
	GPKKH301	V2 = VP = 240V V3 = VP = 415V	600 1.2K	3K 6K	

## Input & output parameters

Vn : Voltage input	Vn rating range	V0 69.3 V 45-86 V	V1 120 V 85-150 V	V2 240 V 180-300 V	V3 415 V 300-500 V	Own : Watt output		Okn : Var output
						O1 0-1 mA	O2 0-20 mA	O3 (uni.) 4-20 mA
An : Current input	An rating range	A1 1 A 0-1.2 A	A2 5 A 0-6 A			O4 (bi.) 4-12-20 mA	O5 0-10 mA	O6 0-1 V
						O7 0-5 V	O8 0-10 V	O9 2-10 V
Fn : Frequency input	Fn rating range	F1 50 Hz 48-52 Hz	F2 60 Hz 58-62 Hz			O10 (uni.) 1-5 V	O11 (bi.) 1-3-5 V	
Pn : Auxiliary power input	Pn rating	P1 120 V	P2 240 V	Py Internal powered / DC powered order on request				
Xn : Standard pulse output for uni-direction	Xn rating	X1 / X3 1 pulse / wh or varh		X2 / X4 10 pulse / wh or varh		X1, X2, Y1, Y2 : open collector type X3, X4, Y3, Y4 : reed relay type		
Yn : Optional pulse output for bi-direction	Yn rating	Y1 / Y3 1 pulse / wh or varh		Y2 / Y4 10 pulse / wh or varh				

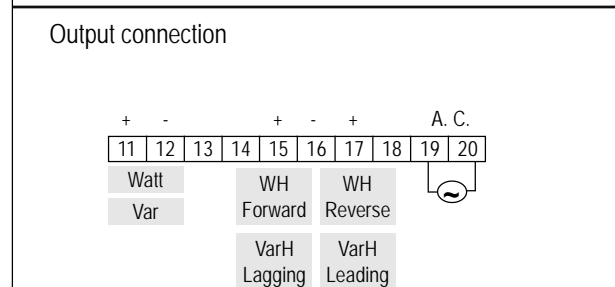
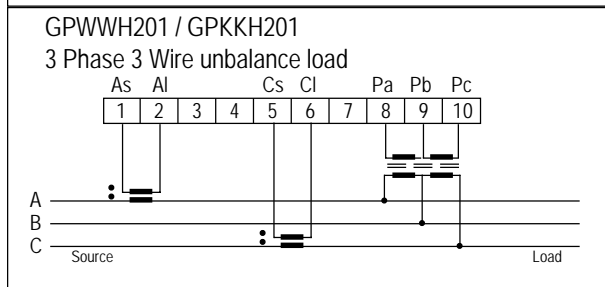
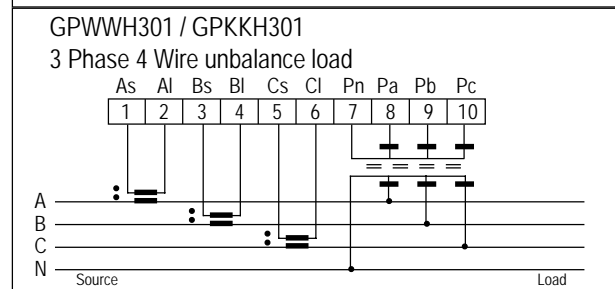
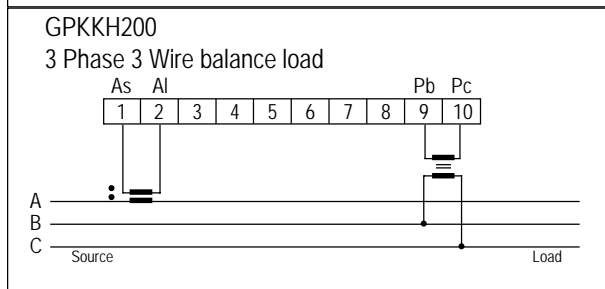
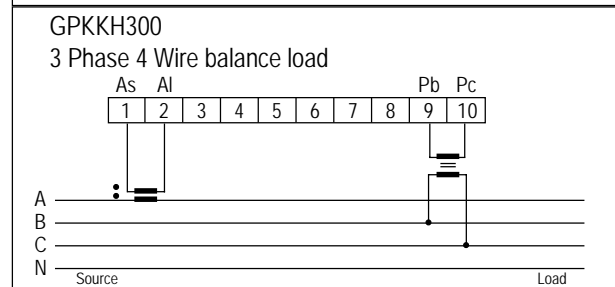
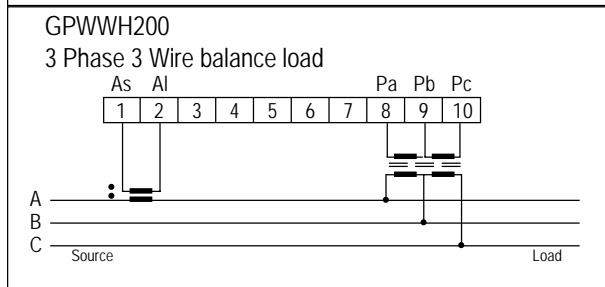
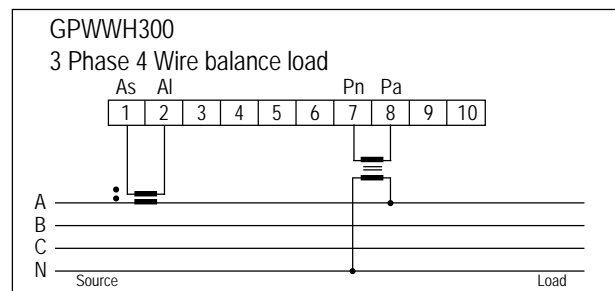
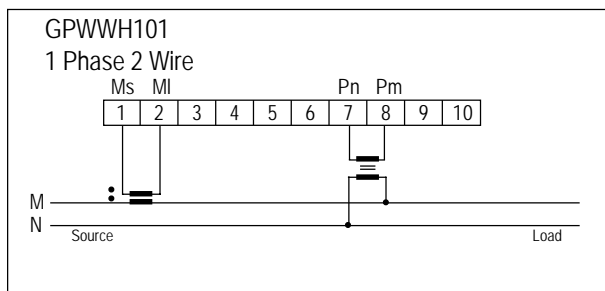
### Note :

1. uni. = uni-direction = 0 to +span      bi = bi-direction = -span to 0 to +span  
 Example : 4-20mA = 0 to +1000W      4-12-20mA = -1000W to 0 to +1000W
2. For uni-directional transducers watts for forward power and vars for lagging power
3. For internal powered type ... zero based outputs and Vn operation range 85%-115%

## Specification

Accuracy ( 23 ± 5°C )	0.5% ro
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	Current 0.3VA typically; voltage 0.2VA typically
Frequency	50 ± 2Hz, 60 ± 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : max. 2 x rated continuous ( 120V / 240V ), max. 1.5 x rated continuous ( 415V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive
Output of WH or VarH	Open collector type, maximum 30V / 30mA; reed relay type, maximum 50V / 40mA
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 50 / 60Hz, < 7W

## Terminals Connection

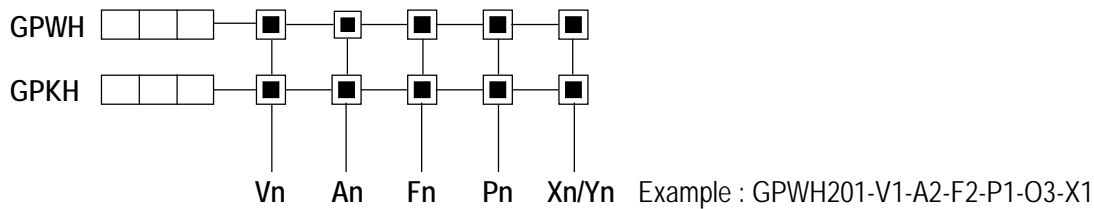


**Note :** 1. A.C. : Auxiliary AC power  
2. Terminal 19 (+), 20 (-) for DC power option

# WATTHOUR & VARHOUR TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



Connection	Model	Standard analog calibration			<b>Note :</b> Voltage input : Phase voltage for 3 phase 4 wire (Vp) Line to line voltage for 3 phase 3 wire (VL)
			1A	5A	
1 Phase 2 Wire	GPWH101	V1 = 120V	100	500	
		V2 = 240V	200	1K	
		V3 = 415V	400	1.5K	
3 Phase 3 Wire Balance	GPWH200	V1 = VL = 120V	100	500	
	GPKH200	V2 = VL = 240V	200	1K	
		V3 = VL = 415V	400	1.5K	
3 Phase 3 Wire Unbalance	GPWH201	V1 = VL = 120V	200	1K	
	GPKH201	V2 = VL = 240V	400	2K	
		V3 = VL = 415V	800	4K	
3 Phase 4 Wire Balance	GPWH300	V1 = VL = 120V	100	500	
	GPKH300	V2 = VL = 240V	200	1K	
		V3 = VL = 415V	400	1.5K	
3 Phase 4 Wire Unbalance	GPWH301	V0 = Vp = 69.3V	200	1K	
	GPKH301	V1 = Vp = 120V	300	1.5K	
		V2 = Vp = 240V	600	3K	
		V3 = Vp = 415V	1.2K	6K	

## Input & output parameters

Input/Output	Rating	V0	V1	V2	V3	Notes
Vn : Voltage input	rating range	69.3 V 45~86 V	120 V 85~150 V	240 V 180~300 V	415 V 300~500 V	Xn : standard pulse output for uni-direction X1 / X3 = 1 pulse / wh or varh X2 / X4 = 10 pulse / wh or varh
An : Current input	rating range	A1 1 A 0~1.2 A	A2 5 A 0~6 A			Yn : optional pulse output for bi-direction Y1 / Y3 = 1 pulse / wh or varh Y2 / Y4 = 10 pulse / wh or varh
Fn : Frequency input	rating range	F1 50 Hz 48~52 Hz	F2 60 Hz 58~62 Hz			X1, X2, Y1, Y2 : open collector type X3, X4, Y3, Y4 : reed relay type
Pn : Auxilliary power input	rating	P1 120 V	P2 240 V	Py Internal powered / DC powered order on request		

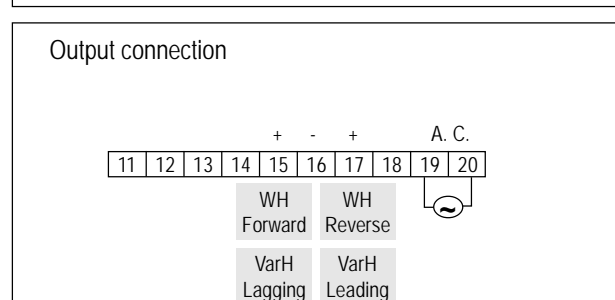
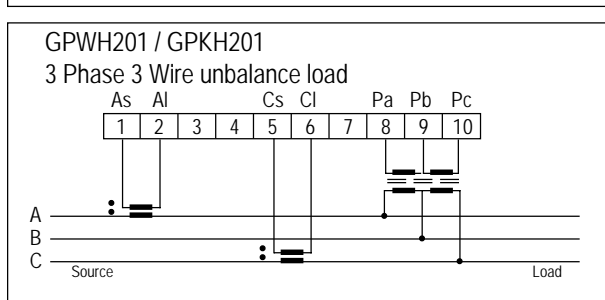
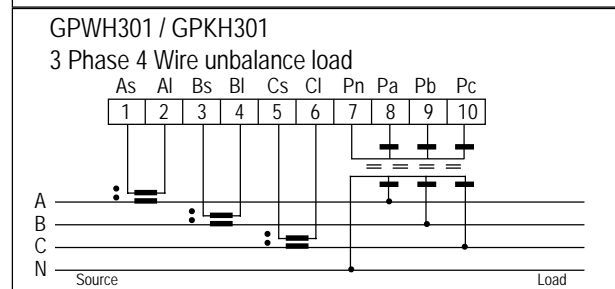
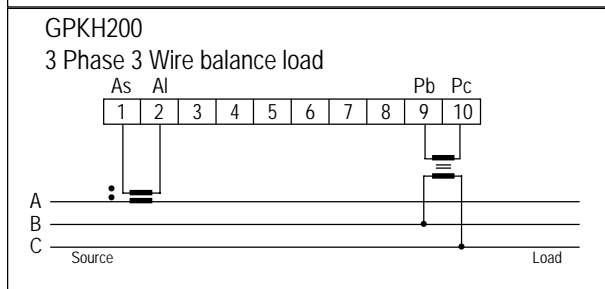
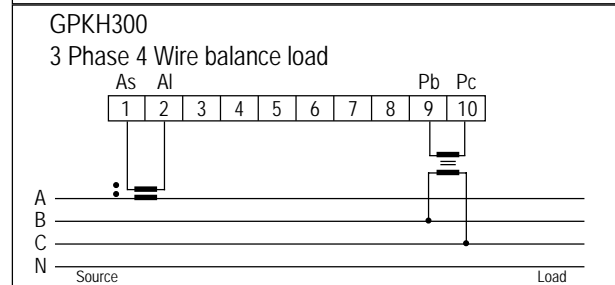
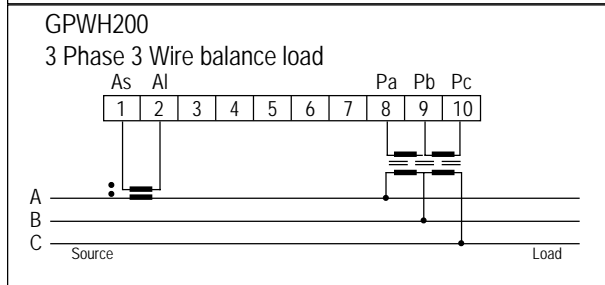
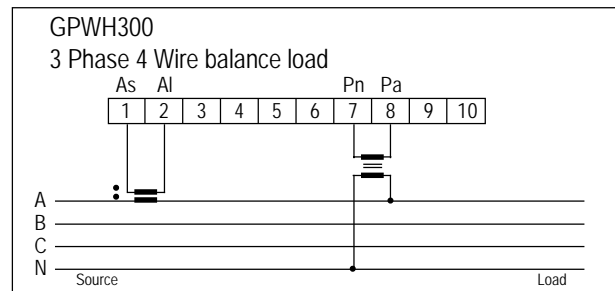
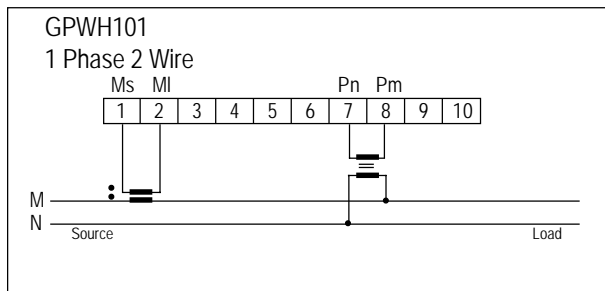
### Note :

1. uni-direction for watthour of forward power, for varhour of lagging power
2. For internal powered type ... zero based outputs and Vn operation range 85%-115%

## Specification

Accuracy ( 23 ± 5°C )	0.5% ro
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	Current 0.3VA typically, voltage 0.2VA typically
Frequency	50 ± 2Hz, 60 ± 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : max. 2 x rated continuous ( 120V / 240V ), max. 1.5 x rated continuous ( 415V )
Output of WH or VarH	Open collector type, maximum 30V / 30mA; reed relay type, maximum 50V / 40mA
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 50 / 60Hz, < 4W

## Terminals Connection



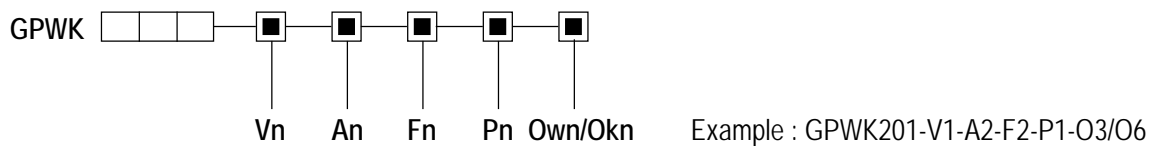
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 Surge test

## Order form



Connection	Model	Standard analog calibration			<b>Note :</b> Voltage input : Phase voltage for 3 phase 4 wire (Vp) Line to line voltage for 3 phase 3 wire (Vl)
			1A	5A	
3 Phase 3 Wire Balance	GPWK200	V1 = VL = 120V V2 = VL = 240V V3 = VL = 415V	100 200 400	500 1K 1.5K	
3 Phase 3 Wire Unbalance	GPWK201	V1 = VL = 120V V2 = VL = 240V V3 = VL = 415V	200 400 800	1K 2K 4K	
3 Phase 4 Wire Balance	GPWK300	V1 = VL = 120V V2 = VL = 240V V3 = VL = 415V	100 200 400	500 1K 1.5K	
3 Phase 4 Wire Unbalance	GPWK301	V0 = Vp = 69.3V V1 = Vp = 120V V2 = Vp = 240V V3 = Vp = 415V	200 300 600 1.2K	1K 1.5K 3K 6K	

## Input & output parameters

Vn : Voltage input	Vn rating range	V0 69.3 V 45~86 V	V1 120 V 85~150 V	V2 240 V 180~300 V	V3 415 V 300~500 V	Own : Watt output		Okn : Var output
						O1 0~1 mA	O2 0~20 mA	O3 (uni.) 4~20 mA
An : Current input	An rating range	A1 1 A 0~1.2 A	A2 5 A 0~6 A			O4 (bi.) 4~12~20 mA	O5 0~10 mA	O6 0~1 V
						O7 0~5 V	O8 0~10 V	O9 2~10 V
Fn : Frequency input	Fn rating range	F1 50 Hz 48~52 Hz	F2 60 Hz 58~62 Hz			O10 (uni.) 1~5 V	O11 (bi.) 1~3~5 V	
Pn : Auxiliary power input	Pn rating	P1 120 V	P2 240 V	Py Internal powered / DC powered order on request				

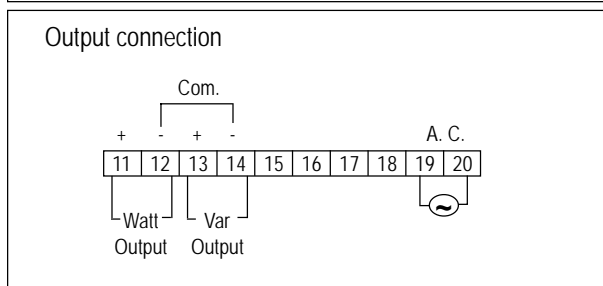
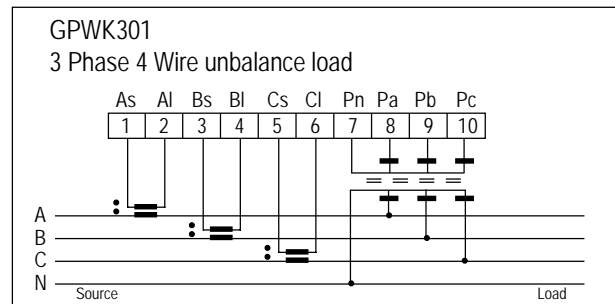
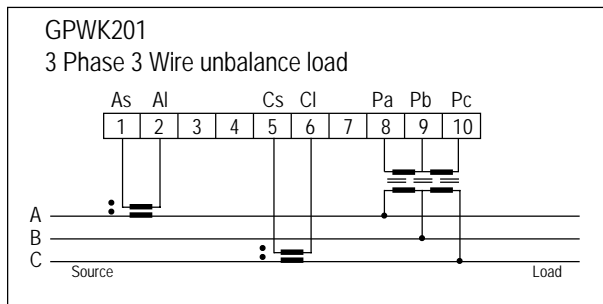
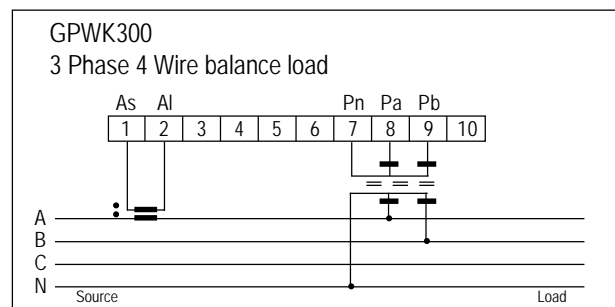
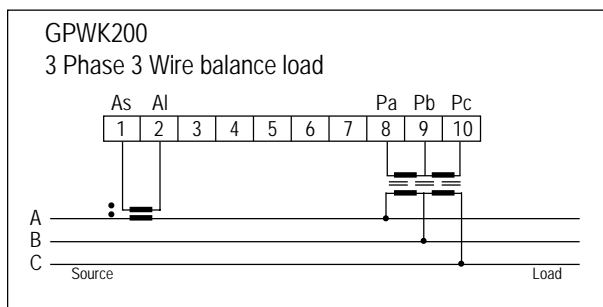
### Note :

1. uni. = uni-direction = 0 to +span      bi = bi-direction = -span to 0 to +span  
 Example : 4-20mA = 0 to +1000W      4-12-20mA = -1000W to 0 to +1000W
2. For uni-directional transducers watts for forward power and vars for lagging power
3. For internal powered type ... zero based outputs and Vn operation range 85%~115%

## Specification

Accuracy ( 23 ± 5°C )	0.5% ro
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	Current 0.3VA typically, voltage 0.2VA typically
Frequency	50 ± 2Hz, 60 ± 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : max. 2 x rated continuous ( 120V / 240V ), max. 1.5 x rated continuous ( 415V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 50 / 60Hz, < 7W

## Terminals Connection



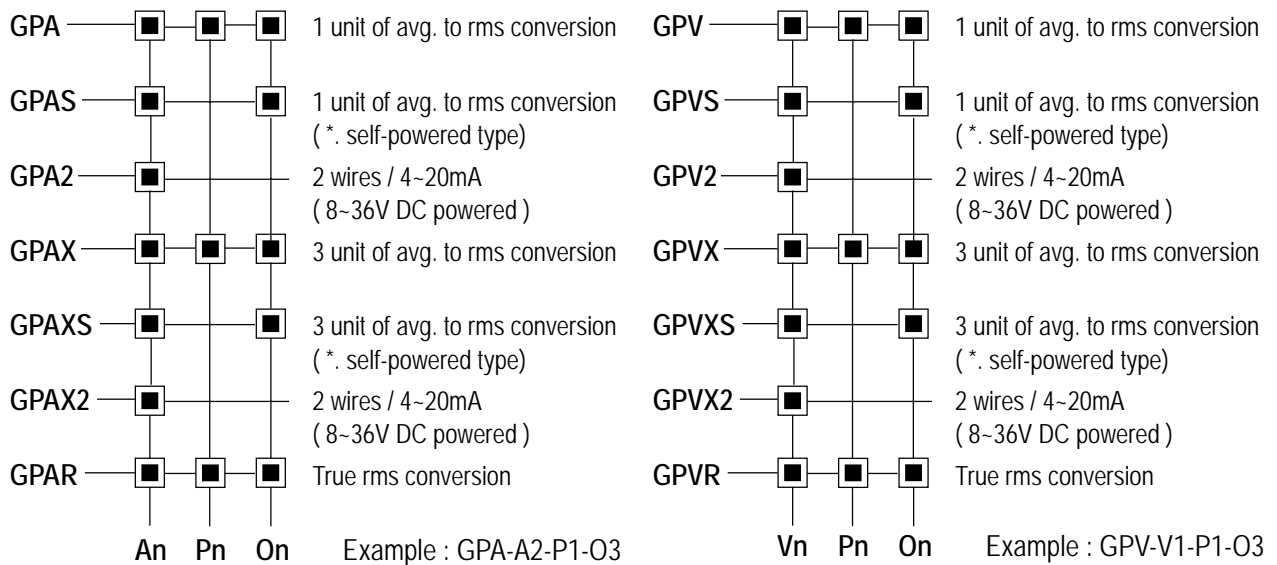
### Note :

1. A.C. : Auxiliary AC power
2. Terminal 19 (+), 20 (-) for DC power option

# AC CURRENT & VOLTAGE TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



## Input & output parameters

Vn : Voltage input	Vn rating range	V1	V2	V3	On : Output		
		150 V 0~150 V	300 V 0~300 V	500 V 0~500 V	O1 0~1 mA	O2 0~20 mA	O3 4~20 mA
An : Current input	An rating range	A1	A2			O5 0~10 mA	O6 0~1 V
		1 A 0~1 A	5 A 0~5 A		O7 0~5 V	O8 0~10 V	O9 2~10 V
Pn : Auxiliary power input	Pn rating	P1	P2		O10 1~5 V		
		120 V	240 V	Py DC powered order on request			

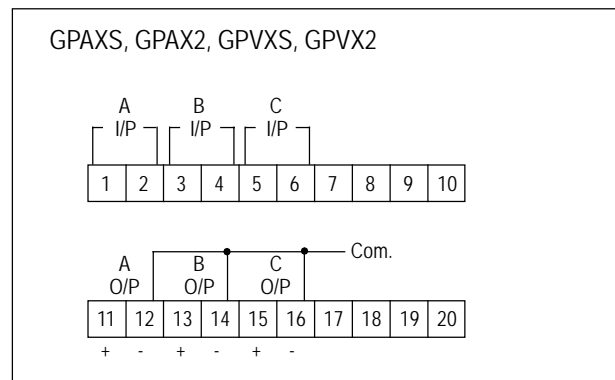
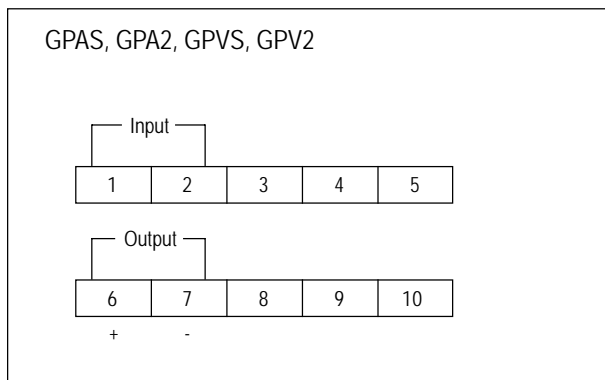
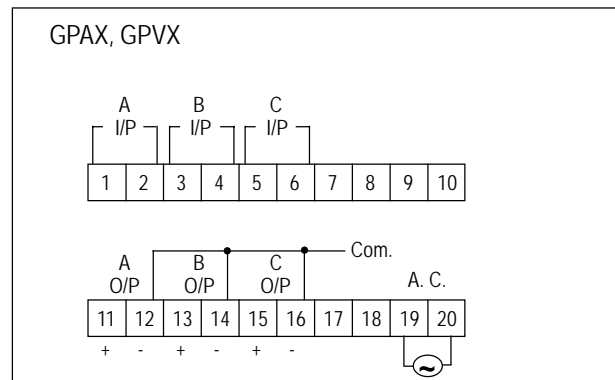
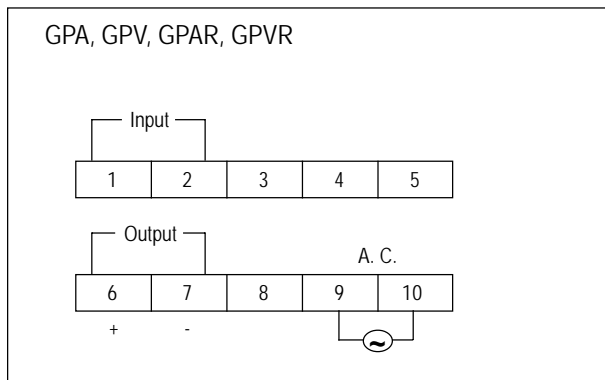
### Note :

1. For self-powered type ... zero based outputs only
2. GPAR & GPVR TRMS conversion with ability for a distortion wave form measment

## Specification

Accuracy ( 23 ± 5°C )	0.5% ro
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	0.3VA / element typically, self-powered type 1VA / element typically
Frequency	50 ± 2Hz, 60 ± 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : maximum 2 x rated continuous ( 150V/300V ) self powered mode 1.5 rated continuous ( 500V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive ( self power type maximum 1mA drive )
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 2 wires ( 8~36V DC powered ), 50 / 60Hz < 3W for GPA, GPV, GPAR, GPVR; 8W for GPAX, GPVX

## Terminals Connection



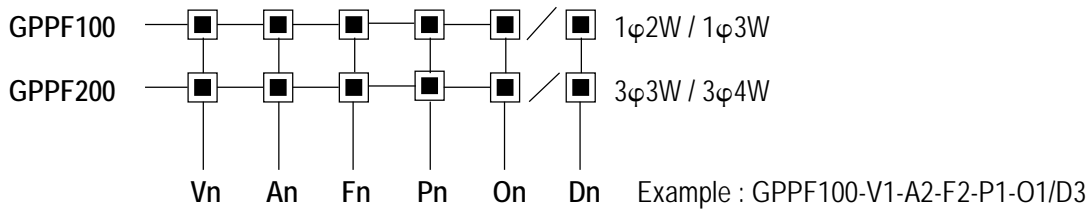
### Note :

1. A.C. : Auxiliary AC power
2. Terminal 9 (+), 10 (-) for DC power option of 1 unit
3. Terminal 19 (+), 20 (-) for DC power option of 3 unit

# POWER FACTOR ( $\cos\phi$ ) TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



## Input & output parameters

Vn : Voltage input	Vn rating range	V1	V2	V3	On : Output		
		120 V 85~150 V	240 V 180~300 V	415 V 300~500 V	O1 0~1 mA	O2 0~20 mA	O3 (uni.) 4~20 mA
An : Current input	An rating range	A1	A2		O4 (bi.) 4~12~20 mA	O5 0~10 mA	O6 0~1 V
		1 A 0~1.2 A	5 A 0~6 A		O7 0~5 V	O8 0~10 V	O9 2~10 V
Fn : Frequency input	Fn rating range	F1	F2		O10 (uni.) 1~5 V	O11 (bi.) 1~3~5 V	
		50 Hz 48~52 Hz	60 Hz 58~62 Hz				
Pn : Auxiliary power input	Pn rating	P1 120 V	P2 240 V	Py Internal powered / DC powered order on request			

### Note :

1. Uni. = uni-direction = 0 to +span      bi = bi-direction = -span to 0 to +span referring to calibration
2. For internal powered type ... zero based outputs and Vn operation range 85%-115%

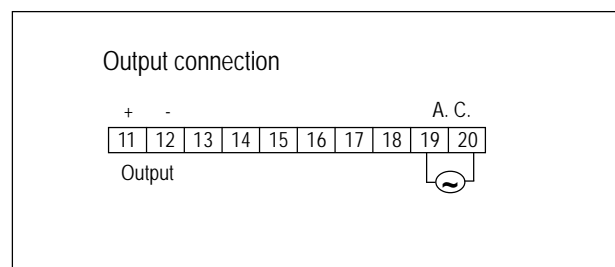
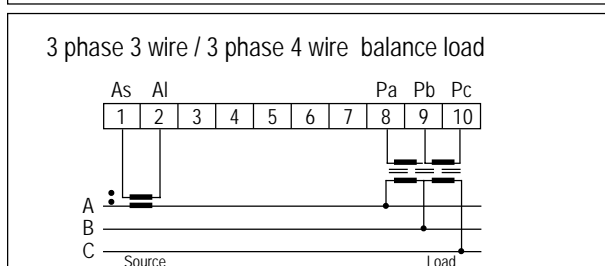
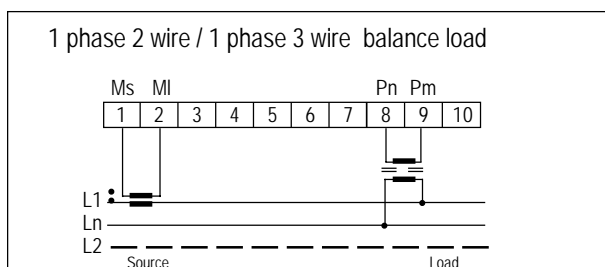
## Calibration : Dn

Bipolar output ( as $\pm 10V$ , $\pm 1mA$ , $\pm 10mA$ )	Bipolar output ( as $\pm 10V$ , $\pm 1mA$ , $\pm 10mA$ )
<p>D1 : 0.5 (C) to 1 to 0.5 (L) vs 0 to 1/2 span to full span output</p> <p>D2 : 0 (C) to 1 to 0 (L) vs 0 to 1/2 span to full span output</p> <p>Note : (C) : Capacitive load (L) : Inductive load</p> <p>Example : GPPF-V1-A2-F2-P1-O3/D1            Input : 120V 5A 60Hz            Output : 4-12-20mA vs 0.5 (C)-1-0.5 (L)            Aux. power : AC120V</p>	<p>D3 : 0.5 (C) to 1 to 0.5 (L) vs -span to 0 to +span output</p> <p>D4 : 0 (C) to 1 to 0 (L) vs -span to 0 to +span output</p> <p>Note : (C) : Capacitive load (L) : Inductive load</p> <p>Example : GPPF-V1-A2-F1-P1-O1/D3            Input : 120V 5A 50Hz            Output : -1-0-+1mA vs 0.5 (C)-1-0.5 (L)            Aux. power : AC120V</p>

## Specification

Accuracy ( $23 \pm 5^\circ C$ )	0.5% ro + 0.3°
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input burden	Current 0.3VA typically, voltage 0.2VA typically
Frequency	50 $\pm$ 2Hz, 60 $\pm$ 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : max. 2 x rated continuous ( 120V / 240V ), max. 1.5 x rated continuous ( 415V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V $\pm$ 15%, 50 / 60Hz, < 3.5W

## Terminals Connection



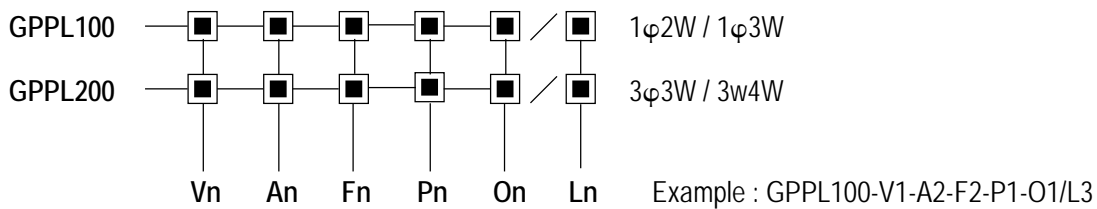
### Note :

1. A.C. : Auxiliary AC power
2. Terminal 19 (+), 20 (-) for DC power option

# PHASE ANGLE TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



## Input & output parameters

Vn : Voltage input	Vn rating range	V1	V2	V3	On : Output		
		120 V 85-150 V	240 V 180-300 V	415 V 300-500 V	O1 0-1 mA	O2 0-20 mA	O3 (uni.) 4-20 mA
An : Current input	An rating range	A1	A2		O4 (bi.) 4-12-20 mA	O5 0-10 mA	O6 0-1 V
		1 A 0-1.2 A	5 A 0-6 A		O7 0-5 V	O8 0-10 V	O9 2-10 V
Fn : Frequency input	Fn rating range	F1	F2		O10 (uni.) 1-5 V	O11 (bi.) 1-3-5 V	
		50 Hz 48-52 Hz	60 Hz 58-62 Hz				
Pn : Auxiliary power input	Pn rating	P1 120 V	P2 240 V	Py Internal powered / DC powered order on request			
Ln : Phase angle	Ln rating	L1 ± 30°	L2 ± 60°	L3 ± 90°			

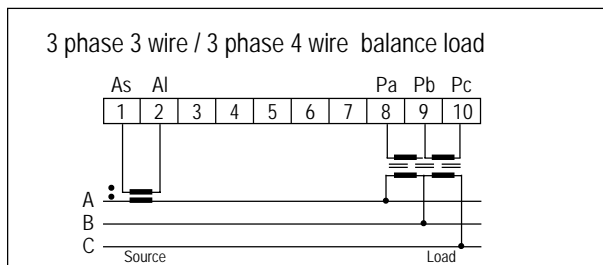
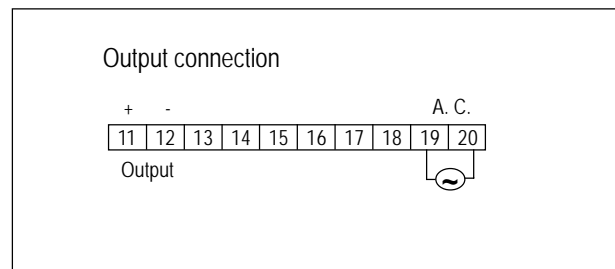
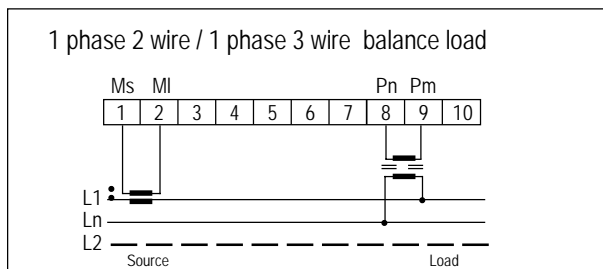
### Note :

1. For internal powered type ... zero based outputs and Vn operation range 85%-115%

## Specification

Accuracy ( 23 ± 5°C )	0.5% ro + 0.3°
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	Current 0.3VA typically, voltage 0.2VA typically
Frequency	50 ± 2Hz, 60 ± 2Hz
Maximum input over	Current related input : 2 x rated continuous, 10 x rated 10 sec, 25 x rated 2 sec, 50 x rated 1 sec Voltage related input : max. 2 x rated continuous ( 120V / 240V ), max. 1.5 x rated continuous ( 415V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.005% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 50 / 60Hz, < 3.5W

## Terminals Connection



### Note :

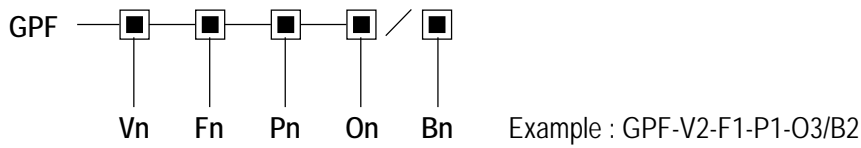
1. A.C. : Auxiliary AC power
2. Terminal 19 (+), 20 (-) for DC power option



# POWER FREQUENCY TRANSDUCER

Compliance : IEC 688  
 Power transducers  
 Measuring & conversion  
 Dielectric Strength  
 Impulse test  
 Surge test

## Order form



## Input & output parameters

Vn : Sensing voltage	Vn range	V1	V2		On : Output		
		60~300V	300~500V		O1	O2	O3
Fn : Frequency input	Fn rating	F1	F2		0~1 mA	0~20 mA	4~20 mA
		50 Hz	60 Hz		O5	O6	O7
Bn : Calibration band	Bn	B1	B2	B3	0~10 mA	0~1 V	0~5 V
		±0.5 Hz	±1 Hz	±2 Hz	O8	O9	O10
		B4	B5		0~10 V	2~10 V	1~5 V
	±5 Hz	±10 Hz					
Pn : Auxiliary power input	Pn rating	P1	P2	Py	Internal powered / DC powered order on request		
		120 V	240 V				

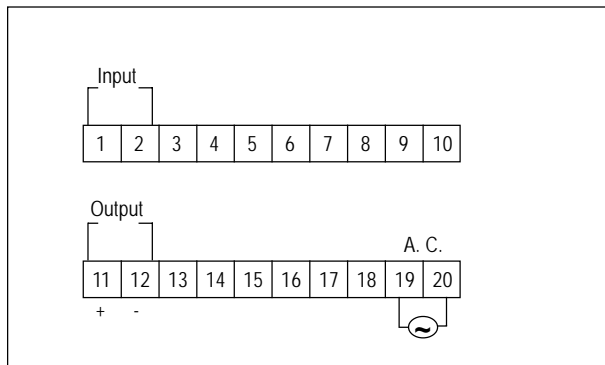
**Note :**

1. For internal powered type ... zero based outputs and Vn operation range 85%~115%

## Specification

Accuracy ( 23 ± 5°C )	0.05% of named frequency
Stability	Maximum 100ppm / °C, less 0.2% drift per year typically
Input bruden	Voltage 0.2VA typically
Frequency	50 / 60 ± band
Maximum input over	Voltage related input : max. 2 x rated continuous ( 50~300V ), max. 1.5 x rated continuous ( 100~500V )
Output load	DC current mode : maximum 10V drop DC voltage mode : maximum 5mA drive
Response & ripple	< 400ms for step change 0-95%, ripple less 0.5% ro peak-peak
Magnetic effect	< 0.05% change 1M center 100 amper-turn, synchronized with line frequency
Aux. power effect	< 0.002% for per voltage change
Dielectric strength	4KV AC rms 1 minute between terminals to case IEC 688 2KV AC rms 1 minute between input / output / power IEC 688
Impulse / SWC	IEC 255-4, 5KV 1.2x50us, IEC255-22-1, 2.5KV ( 1MHz / 400Hz )
Operating condition	-5 to 60°C, 20 to 99% RH non condensing
Storage condition	-20 to 70°C, 20 to 99% RH non condensing
Radio screening	RFI degree N complies with VDE 0875
Enclosure code	Case IP 50 / terminals IP 30, complies with IEC 529, BS 5490 DIN 40050
Power supply	AC 120V / 240V ± 15%, 50 / 60Hz, < 3.5W

## Terminals Connection

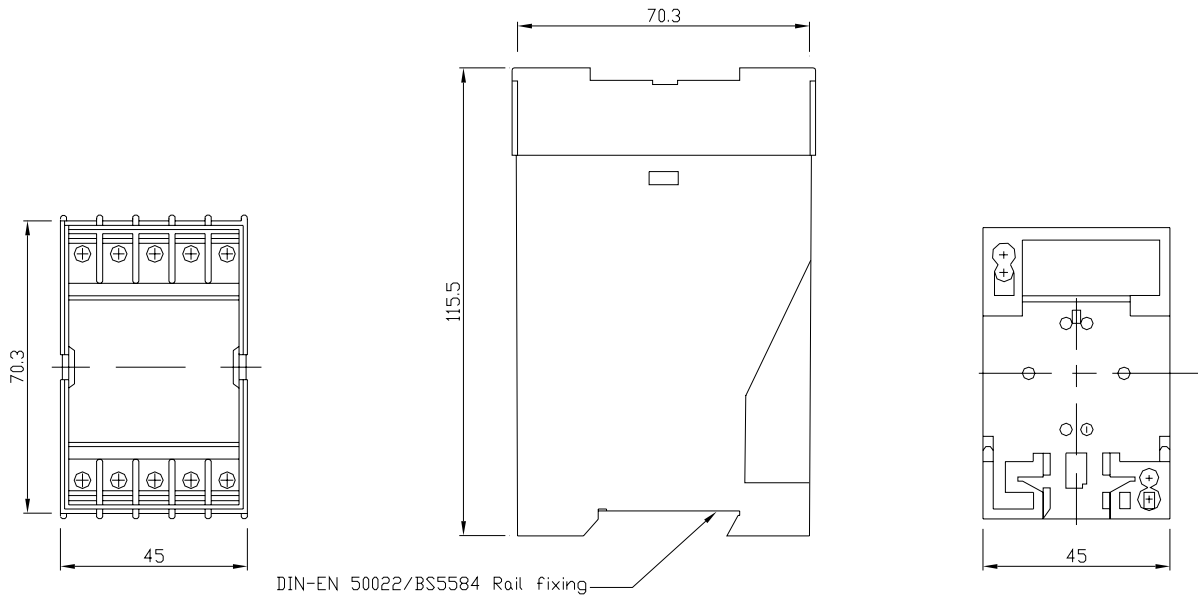


### Note :

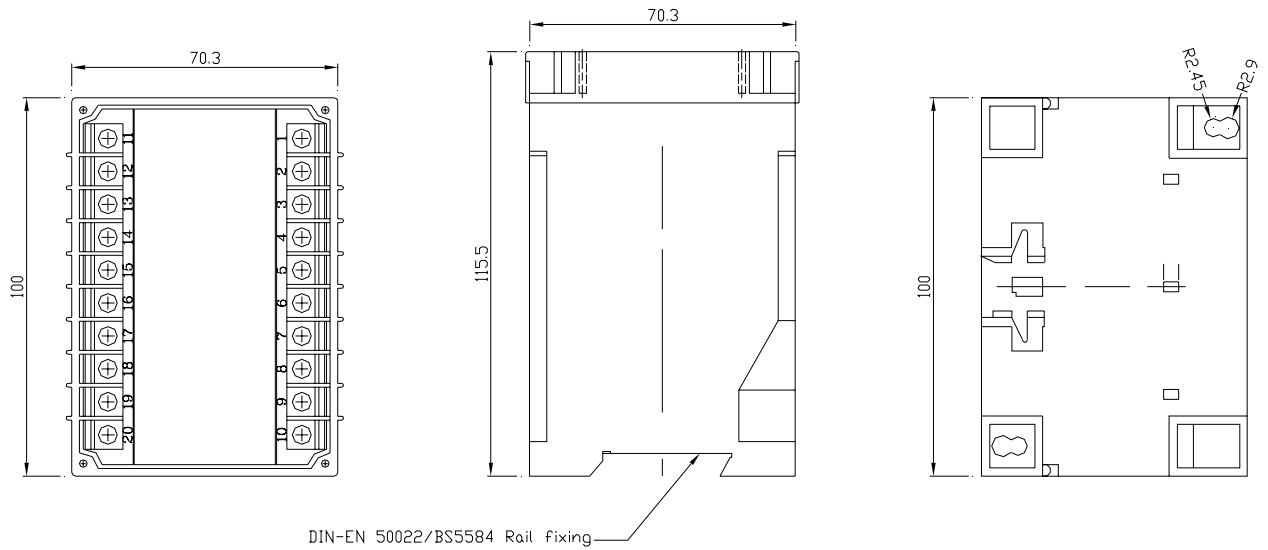
1. A.C. : Auxiliary AC power
2. Terminal 19 (+), 20 (-) for DC power option

## Dimension

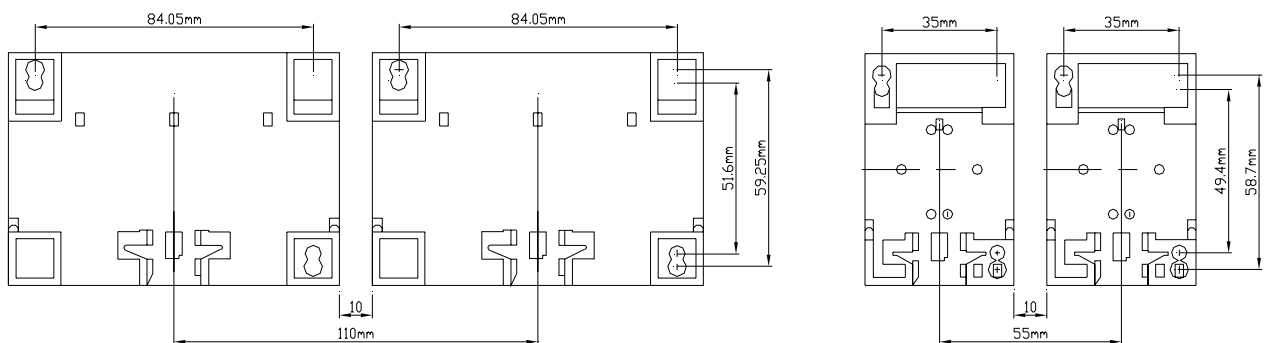
Model : GPA, GPAS, GPAR, GPA2, GPV, GPVS, GPVR, GPV2



Model : GPW, GPK, GPWWH, GPKKH, GPWH, GPKH, GPWK, GPPF, GPPL, GPF  
GPAX, GPAXS, GPAX2, GPVX, GPVXS, GPVX2



## Installation instructions



# **GP Series**

## **New Hybrid Asic Designed Electric Transducer**

- High performance & stability of less than 100/ppm drift per °C change
- High impulse & surge protection of up to 5KV (RMS) meeting IEC 688
- Commonly for DIN rail-mounting

### *Features :*

- The GP series are Din-case electrical power transducers designed for the general industries applications
- Manufactured to strict compliance IEC 688
- The input & output parameters are per-selected from a wide range of industries' compatible signals and other non-stated ranges are available on request or as options
- Well-proven applied circuitries fully ensuring long term stability
- DIN case in small size of spacesaving
- Protective touch-proof terminals and enclosure meeting requirements of VBG4 & VDE 0106 part 100 (Germany)

### *Specifications :*

- Accuracy : 0.5% RO
- Meets, IEC 688
- High magnetic field immunity
- Real power able to measure distorted waveform
- Excellent long term stability



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