

**HD POWER TRANSDUCER SERIES**

**Var&VarHOUR TRANSDUCER**

MODEL HDKKH -

**MODEL & SUFFIX CODE SELECTION**

MODEL **HDKKH**

■ **PHASE & WIRE**

1	1 P 2 W
2	1 P 3 W
3	3 P 3 W
4	3 P 4 W

■ **VOLTAGE & AMPERE**

P × W	P.T ratio	CT	CODE
1P2W	110V	5A	A
	220V	5A	B
1P3W	110V	5A	A
	220V	5A	B
3P3W	380V/110V	5A	A
	440V/110V		
	3300V/110V		
	6600V/110V		
	154kV/110V		
	22900V/110V		
3P4W	208/√3V	5A	A
	380/√3/190/√3V	5A	A
	380/√3V	5A	B
	22900/√3/190/√3V	5A	C

■ **Var POLARTIY**

: Availability as Var hour mode

■ **OUTPUT**

\* **ANALOG OUTPUT**

A	DC 4-20mA
B	DC 0-1mA
C	DC 0-10mA
D	DC 0-20mA
E	DC 1-5mA
O	Spec Order

1	DC 0-10mV
2	DC 0-100mV
3	DC 0-1V
4	DC 0-10V
5	DC 0-5V
6	DC 1-5V
O	Spec Order

\* **PULSE OUTPUT**

\* **PULSE MODE**

A	open collector
B	voltage pulse
C	relay contact

\* **PULSE RANGE**

1	1Varh/1pulse
2	1KVarh/1pulse
O	Spec Order

**ORDERING INFORMATION**

Specify code number and variables

\* **Code number** : HDKKH-phase/wire-voltage/ampere  
-POLARITY-analog output-pulse mode-pulse range  
ex: HDKKH-4AAAA1

\* **special output range** : code O  
A = -10~20mA, V = -10~12V  
Pulse range : 0 - 10Hz

**GENERAL SPECIFICATIONS**

**Construction** : DIN housings Terminal access on front face  
**Housing material** : plastic(black)  
**Wiring** : 3.0M screw terminals  
**Isolation** : AC input/DC output/power



The Var&Varhour transducer Model HDKKH provides a DC signal output and PULSE proportional to AC reactive power  
\* Little ripple : stable output  
\* Input - output isolated  
\* Frequency output available for totalizing

**Adjustments** : zero and span ±5%  
Over-range output = 0-120%

**PERFORMANCE**

**Accuracy** : 0.1% or 0.25%  
**Temp. coefficient** : 0.03%/C  
**Insulation resistance** : 100Mohm or more with 500V DC  
**Response time** : 0.4sec(400ms)  
**Line Voltage effect** : 0.1% with 10% change  
**Ripple** : 0.25% p-p max. (100/120Hz)  
**Dielectric strength** : 2000V AC 1minute  
input/output/power  
**Surge withstand Voltage** : 1.2/50µsec, ±5KV  
(INPUT to OUTPUT to GROUND)

**INSTALLATION**

**Operating temperature** : -5 to +55C  
**Operating humidity** : 20-80%RH(non-condensing)  
**Mounting** : Wall or DIN rail  
**Power supply** : AC 110V or 220V (-15/+10%)  
50/60Hz, 2VA  
**Size** : W75 H150 D113mm  
**Weight** :

**INPUT & OUTPUT**

■ **INPUT**  
\* Voltage Side ( PT side )  
**Operational range** : 0-110V  
**Permissible over range** : 150% for 10 seconds  
120% continuously  
\* Current Side ( CT side )  
**Operational range** : 0-120V  
**Permissible over range** : 100% for 5 seconds  
150% for 10 seconds  
120% continuously  
**Frequency** : 60 or 50Hz

■ INPUT RANGE

1-PHASE/2-WIRE

MODEL CODE	INPUT		STANDARD RANGE			BURDEN (VA)	
			Var	VarHOUR		VOLTAGE	CURRENT
				Open-collector	Relay-contact		
A	110V 1A	50Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA	0,5VA
	110V 5A	250Var					
B	220V 1A	100Var	1Count /Varh	1Count /Varh	10Count /Varh	0,44VA	0,5VA
	220V 5A	500Var					

1-PHASE/3-WIRE

MODEL CODE	INPUT		STANDARD RANGE			BURDEN (VA)	
			Var	VarHOUR		VOLTAGE	CURRENT
				Open-collector	Relay-contact		
A	110V 1A	100Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA /phase	0,5VA /phase
	110V 5A	500Var					

3-PHASE/3-WIRE

MODEL CODE	INPUT		STANDARD RANGE			BURDEN (VA)	
			Var	VarHOUR		VOLTAGE	CURRENT
				Open-collector	Relay-contact		
A	110V 1A	100Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA /phase	0,5VA /phase
	110V 5A	500Var					
B	220V 1A	200Var	1Count /Varh	1Count /Varh	10Count /Varh	0,44VA /phase	0,5VA /phase
	220V 5A	1000Var					
C	110V 1A	116Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA /phase	0,5VA /phase
	110V 5A	579Var					
D	110V 1A	96Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA /phase	0,5VA /phase
	110V 5A	480Var					

3-PHASE/4-WIRE

MODEL CODE	INPUT		STANDARD RANGE			BURDEN (VA)	
			Var	VarHOUR		VOLTAGE	CURRENT
				Open-collector	Relay-contact		
A	190/√3V 1A	200Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA /phase	0,5VA /phase
	190/√3V 5A	1000Var					
B	380/√3V 1A	400Var	1Count /Varh	1Count /Varh	10Count /Varh	0,44VA /phase	0,5VA /phase
	380/√3V 5A	2000Var					
C	190/√3V 1A	166Var	1Count /Varh	1Count /Varh	10Count /Varh	0,22VA /phase	0,5VA /phase
	190/√3V 5A	833Var					

HOW TO DETERMINE Var RANGE

Measuring Var Value(Var) = PT ratio × CT ratio × STANDARD RANGE [Var]

Check that the required calibration range is within the available range in the table, specify this range when ordering.

[example]

3-phase/3-wire, PT 3300/110V, CT 250/5A

Measuring Var Value = 3300/110 × 250/5 × 1000Var = 150KVar

■ HOW TO DETERMINE PULSE

$$\text{Calibration Range [Var]} = \frac{\text{Measuring Var}}{\text{PT ratio} \times \text{CT ratio}}$$

Check that the required calibration range is within the available range in the table

VarHOUR PULSE RANGE

• pulse ratio = Calibration Var range / 1hour

[example] 3-phase / 3-wire 110V . 5A . 1000Var  
pulse range = 1000 pulse / 1hour

VarHOUR PULSE RATIO RANGE

1 pulse ratio = PT ratio × CT ratio × Varh

[example] 3-phase / 3-wire 110V . 5A  
PT : 3300V/110V CT : 250A/5A

1 pulse ratio = 30 (PT ratio) × 50 (CT ratio) × Varh  
= 1500Varh

■ OUTPUT

DC Current : 0-20mA DC

Minimum span : 1mA

zero bias : max. 1.5 Times of span

LOAD resistance

OUTPUT	LOAD RESISTANCE	IMPEDANCE
4-20mA	0-600 Ω	5Mohm or more
0-20mA	0-600 Ω	
0-16mA	0-750 Ω	
0-10mA	0-1200 Ω	
0-1mA	0-12k Ω	
0-5mA	0-2400 Ω	

DC Voltage : 0-12V DC

Minimum span : 5mV

zero bias : max. 1.5 Times of span

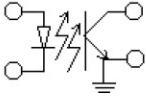
OUTPUT	LOAD RESISTANCE	IMPEDANCE
0-10mV	10k Ω or more	10 Ω
0-100mV	100k Ω or more	100 Ω
0-1V	1k Ω or more	1 Ω or less
0-10V	10k Ω or more	
0-5V	5k Ω or more	
1-5V		

\* for other ranges within 0-12V, use equation  
R = E/I where : R = load resistance (ohm)  
E = full-scale output (V)  
I = 1 mA

**OUTPUT**

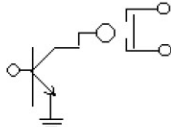
**\* MODE**

A. Open collector



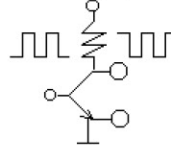
Min 1 V DC 100mA  
Max 20V DC 100mA

B. Relay contact



Relay Capacity  
100V, 0.1 A

C. Voltage pulse

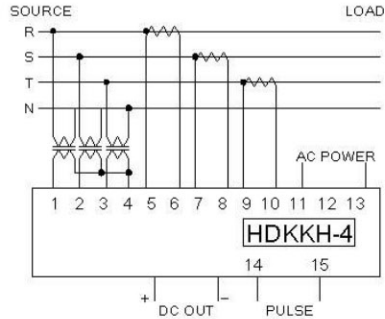
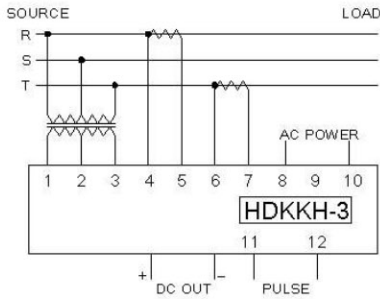
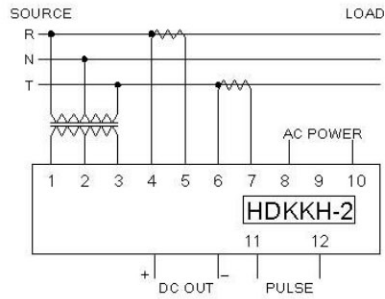
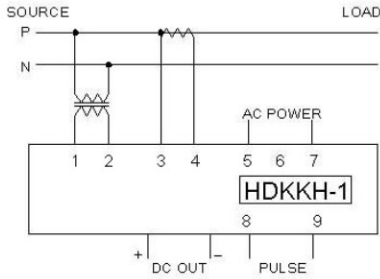


High +15V 5mA  
Low 0V

\* **ON duration** : 250 msec. [ min, 50msec., max. wattinput range/1hour x 1/2 sec

\* **Frequency range** : 0 - 2,777Hz

**CONNECTION DIAGRAM**



**DIMENSION & INSTRUCTIONS**

