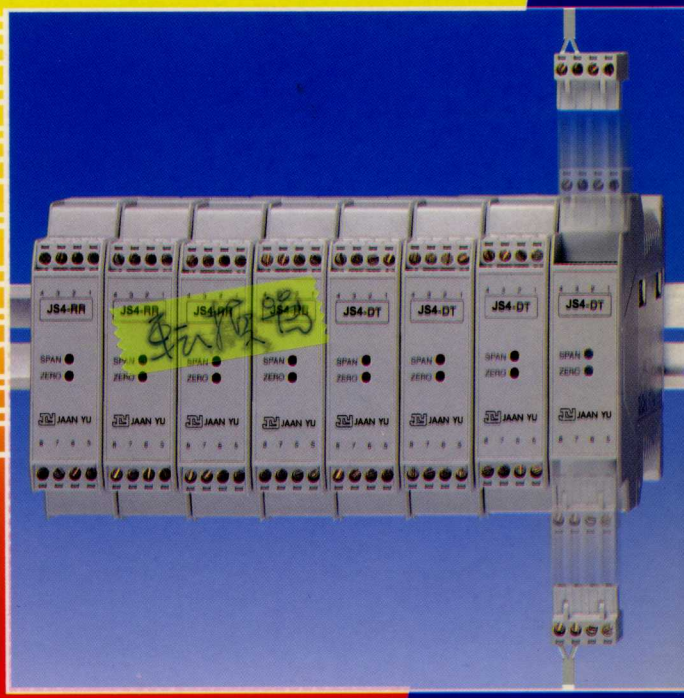
J-SERIES
TRANSDUCER



JAAN YU

TABLE OF CONTENTS

AC CURRENT TRANSDUCER

JAD SERIES

FEATURES

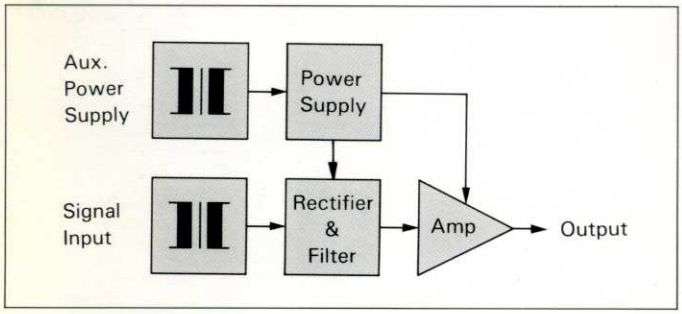
- Accuracy ±0.2% RO.
- Excellent long term stability (4~20mA, 750Ω)
- Precision measurement even for distorted wave (JAD-1T, JAD-3T)
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

DESCRIPTION

Model: JAD-1 1φ input (AVG.)
JAD-3 3φ input (AVG.)
JAD-1T 1φ input (TRMS)
JAD-3T 3φ input (TRMS)

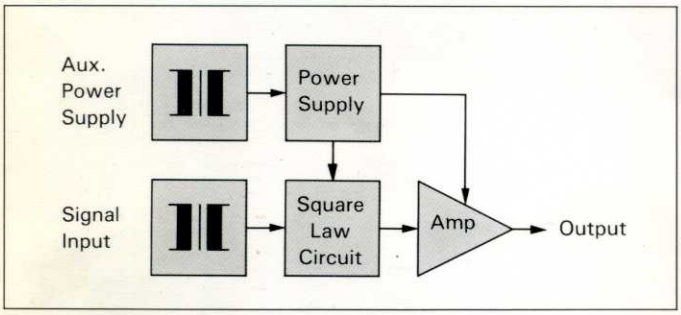
Sinusoidal Waveforms — AVG.

JAD Series Transducer converting a sinusoidal alternating current into a dc output, proportional to the RMS value of input. These units are average sensing, but RMS calibrated for a sine wave with less than 1% distortion. The input signal is converted to a dc voltage which then feeds to a single stage amplifier and a dc output produced.

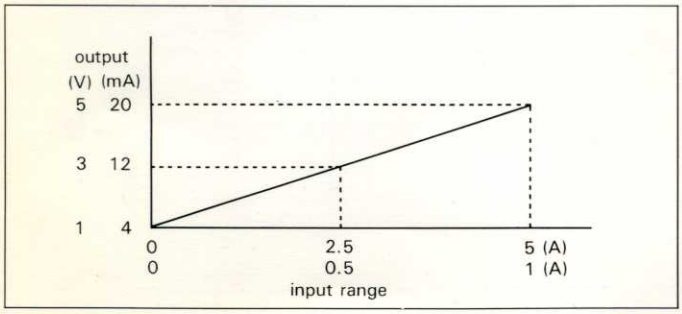


Non-Sinusoidal Waveforms — TRMS

JAD-1T, JAD-3T Transducer are designed for use on waveforms with up to 30% of 3rd harmonic content. The input signal is fed to an RMS detection circuit and the resultant dc volts produced are a linear function of the RMS value of input waveform. This dc voltage is converted to a milliamp output via an output amlification circuit.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range	Input Burden	Input Frequency	Max. Input Over capability
0~1A	≤0.1VA	50HZ±3HZ or 60HZ±3HZ	3 × rated continuous 10 × rated 10 sec. 50 × rated 1 sec.
0~5A			

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥500Ω	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
0~5V				
1~5V				
0~10V				
0~1mA	0~15KΩ	≥20MΩ		
0~10mA	0~1500Ω	≥5MΩ		
0~20mA	0~750Ω			
4~20mA				

* If DC SOURCE, load resistance: voltage output (≥1KΩ)
ampere output: 0~1mA (0~10KΩ), 0~10mA (0~1KΩ)
0~20mA, 4~20mA (0~500Ω)

Accuracy ..... ±0.2% Rated of Output
Aux. power supply ..... AC 110V ±15%, 50/60HZ
AC 220V ±15%, 50/60HZ
DC24V, 48V, 110V, ±15%,
Power consumption ..... ≤2.5VA, ≤DC 3W
Power effect ..... ≤0.1% RO.
Waveform effect ..... ≤0.2% RO. at distortion factor 30% (JAD-1T, JAD-3T)
Output load effect ..... ≤0.05% RO.
Magnetic field strength ..... ≤0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM from 0 to 60°C
≤60PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI, C37) AC 2.6KV, 60HZ, 1 min
Impulse withstand test ..... 5KV, 1.2 × 50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirements ..... IEC 414, BS5458

ORDERING INFORMATION

JAD-1
JAD-1T
JAD-3
JAD-3T – □ □ □ □

Model
JAD-1 for 1φ input (AVG.)
JAD-3 for 3φ input (AVG.)
JAD-1T for 1φ input (TRMS)
JAD-3T for 3φ input (TRMS)

Input Range
1: 0 ~ 1A
5: 0 ~ 5A
0: Option

Input Frequency
5: 50HZ ± 3HZ
6: 60HZ ± 3HZ
0: Option

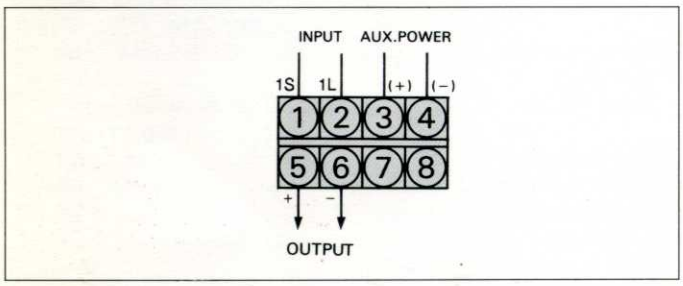
Output Range
V1: 0 ~ 1V A1: 0 ~ 1mA
V2: 0 ~ 5V A2: 0 ~ 10mA
V3: 1 ~ 5V A3: 0 ~ 20mA
V4: 0 ~ 10V A4: 4 ~ 20mA
OO: Option

Aux. Power Supply
A: AC 110V C: DC 24V
B: AC 220V D: DC 48V
0: Option E: DC 110V

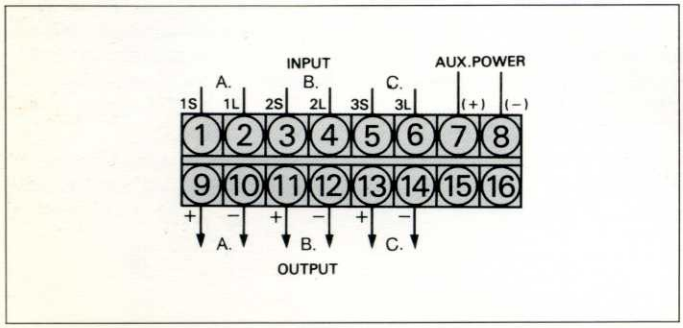
- **EXAMPLE**
  Input: 1φ, AC 0 ~ 5A, 60HZ, Output: DC 4-20mA
  Aux. power source: AC 110V
  Ordering model: JAD-1-56A4A

CONNECTION DIAGRAM

- **JAD-1, JAD-1T**

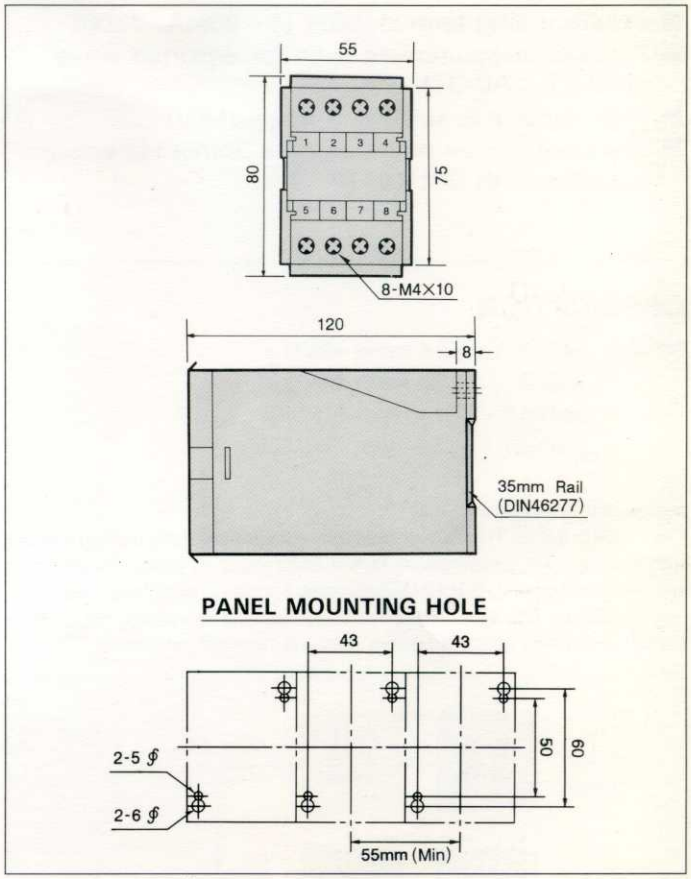


- **JAD-3, JAD-3T**

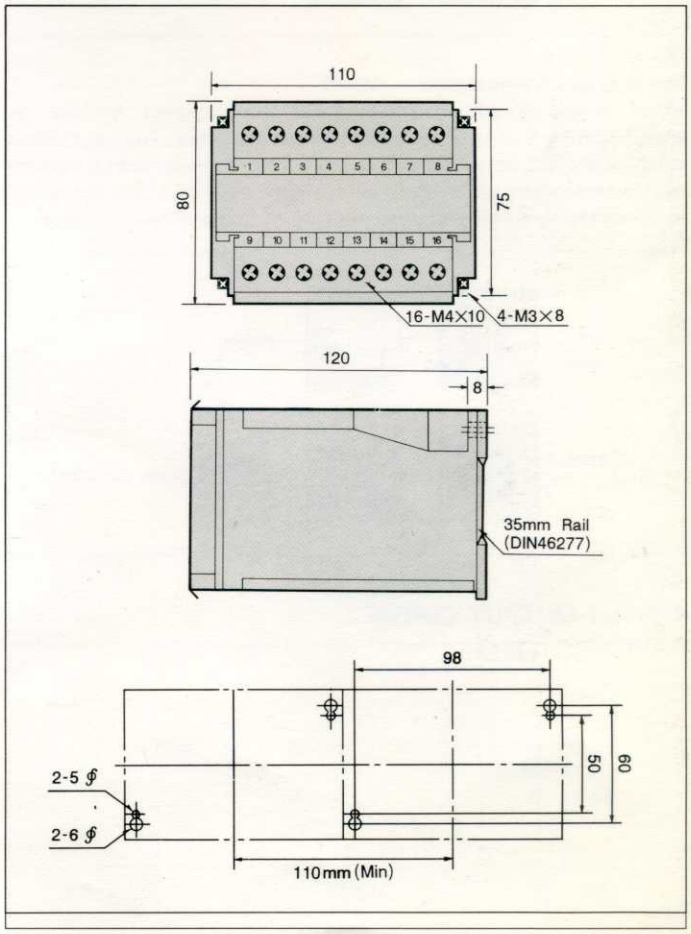


THE OUTSIDE DIMENSION (UNIT: mm)

- **JAD-1, JAD-1T**



- **JAD-3, JAD-3T**



AC VOLTAGE TRANSDUCER

JVD SERIES

FEATURES

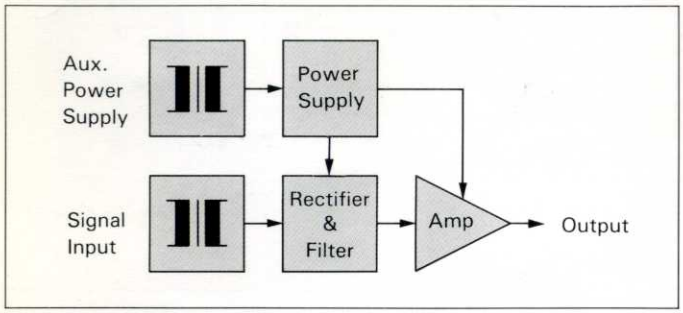
- Accuracy ±0.2% RO.
- Excellent long term stability (4~20mA, 750Ω)
- Precision measurement even for distorted wave (JVD-1T, JVD-3T)
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

DESCRIPTION

Model: JVD-1 1ϕ input (AVG.)
JVD-3 3ϕ input (AVG.)
JVD-1T 1ϕ input (TRMS)
JVD-3T 3ϕ input (TRMS)

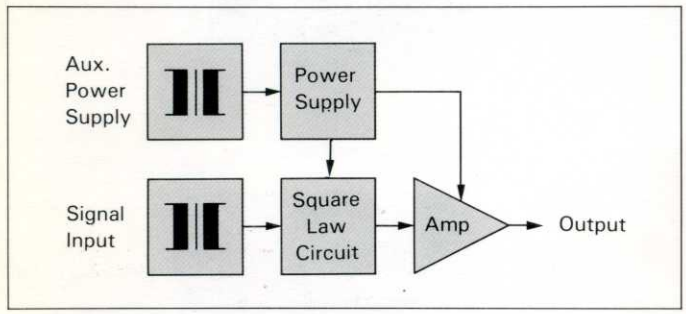
Sinusoidal Waveforms — AVG.

JVD Series Transducer converting a sinusoidal alternating voltage into a dc output, proportional to the RMS value of input. These units are average sensing, but RMS calibrated for a sine wave with less than 1% distortion. The input signal is converted to a dc voltage which then feeds to a single stage amplifier and a dc output produced.

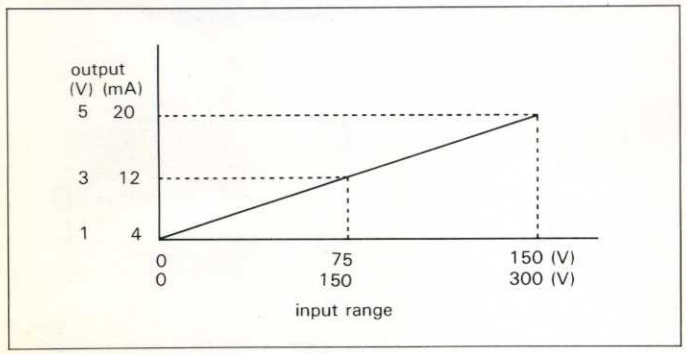


Non-Sinusoidal Waveforms — TRMS

JVD-1T, JVD-3T Transducer are designed for use on waverforms with up to 30% of 3rd harmonic content. The input signal is fed to an RMS detection circuit and the resultant dc volts produced are a linear function of the RMS value of input waveform. This dc voltage is converted to a milliamp output via an output amlification circuit.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range	Input Burden	Input Frequency	Max. Input Over capability
0~150V	≤0.2VA	50HZ±3HZ or	2 × rated continuous
0~300V			

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥500Ω	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
0~5V				
1~5V				
0~10V				
0~1mA	0~15KΩ	≥20MΩ		
0~10mA	0~1500Ω	≥5MΩ		
0~20mA	0~750Ω			
4~20mA				

* If DC SOURCE, load resistance: voltage output (≥1KΩ) ampere output: 0~1mA (0~10KΩ), 0~10mA (0~1KΩ) 0~20mA, 4~20mA (0~500Ω)

Accuracy ..... ±0.2% Rated of Output
Aux. power supply ..... AC 110V ±15%, 50/60HZ
AC 220V ±15%, 50/60HZ
DC24V, 48V, 110V, ±15%,
Power consumption ..... ≤2.5VA, ≤DC 3W
Power effect ..... ≤0.1% RO.
Waveform effect ..... ≤0.2% RO. at distortion factor 30% (JVD-1T, JVD-3T)
Output load effect ..... ≤0.05% RO.
Magnetic field strength ..... ≤0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM from 0 to 60°C
≤60PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI, C37) AC 2.6KV, 60HZ, 1 min
Impulse withstand test ..... 5KV, 1.2 × 50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirements ..... IEC 414, BS5458

ORDERING INFORMATION

JVD-1
JVD-1T
JVD-3
JVD-3T – □ □ □ □

Model

JVD-1 for 1φ input (AVG.)
JVD-3 for 3φ input (AVG.)
JVD-1T for 1φ input (TRMS)
JVD-3T for 3φ input (TRMS)

Input Range

1: 0 ~ 150V
3: 0 ~ 300V
0: Option

Input Frequency

5: 50HZ ± 3HZ
6: 60HZ ± 3HZ
0: Option

Output Range

V1: 0 ~ 1V A1: 0 ~ 1mA
V2: 0 ~ 5V A2: 0 ~ 10mA
V3: 1 ~ 5V A3: 0 ~ 20mA
V4: 0 ~ 10V A4: 4 ~ 20mA
OO: Option

Aux. Power Supply

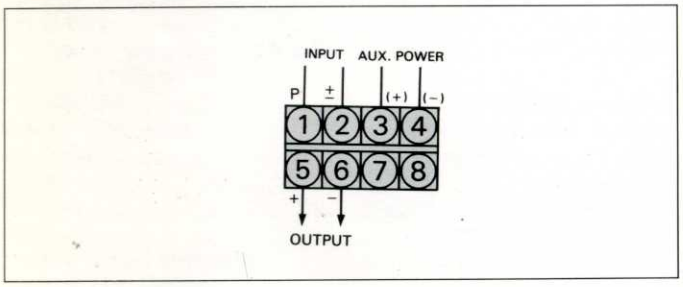
A: AC 110V C: DC 24V
B: AC 220V D: DC 48V
0: Option E: DC 110V

- **EXAMPLE**

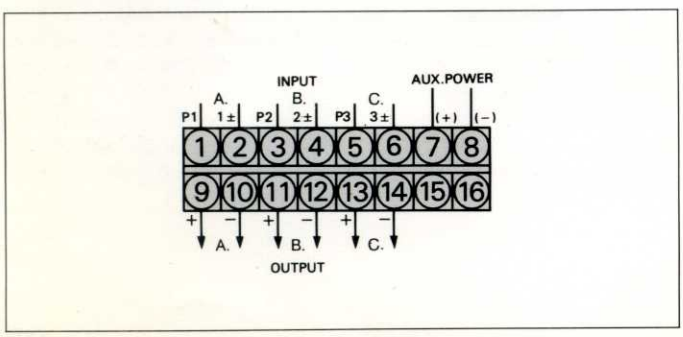
Input: 1φ, AC 0 ~ 150V, 60HZ, Output: DC 4-20mA
Aux. power source: AC 110V
Ordering model: JVD-1-16A4A

CONNECTION DIAGRAM

- **JVD-1, JVD-1T**

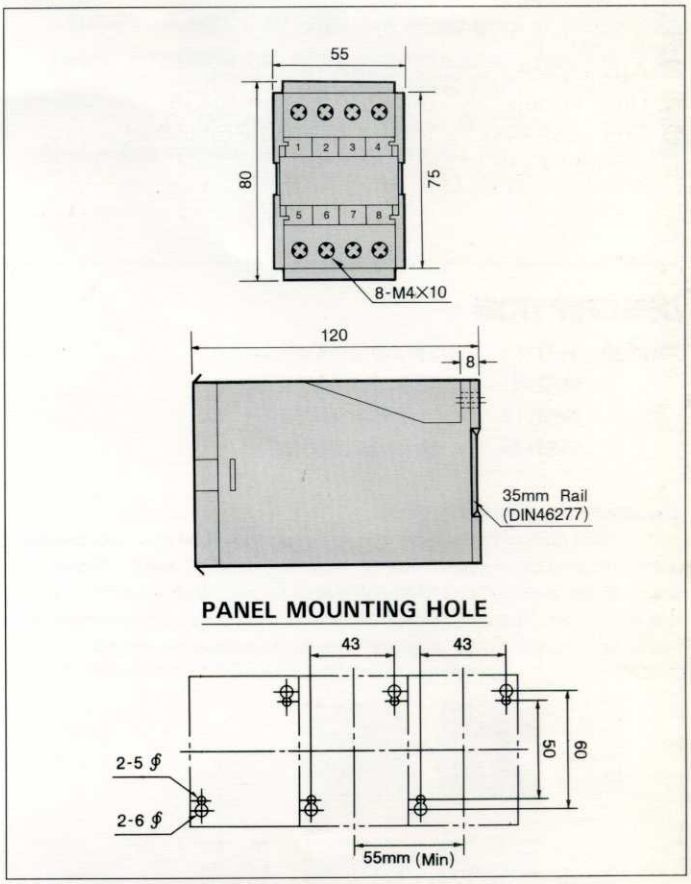


- **JVD-3, JVD-3T**

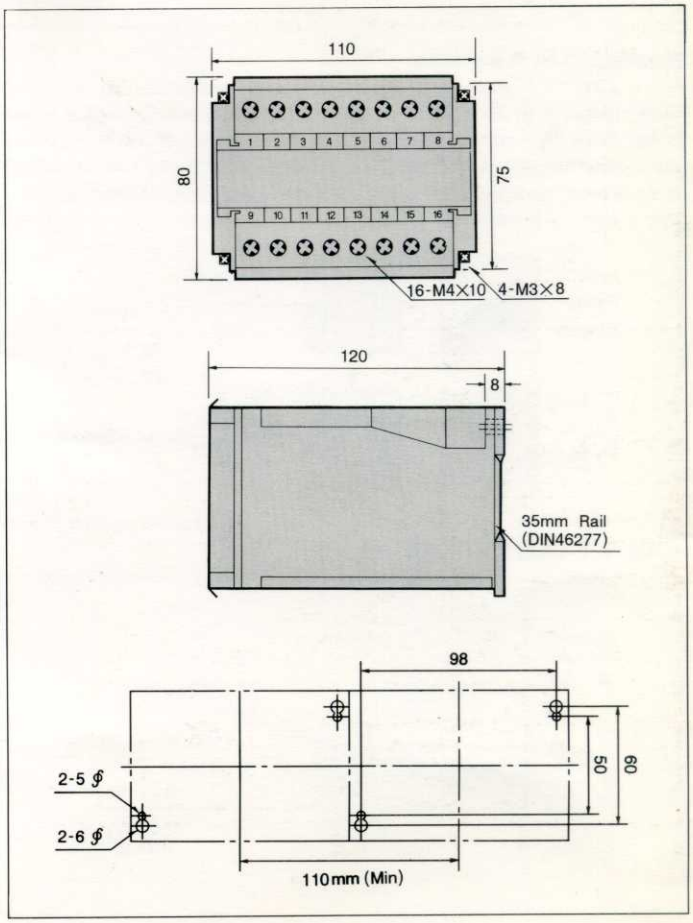


THE OUTSIDE DIMENSION (UNIT: mm)

- **JVD-1, JVD-1T**



- **JVD-3, JVD-3T**



AC CURRENT, VOLTAGE TRANSDUCER(SELF POWERED)

JASD
JVSD

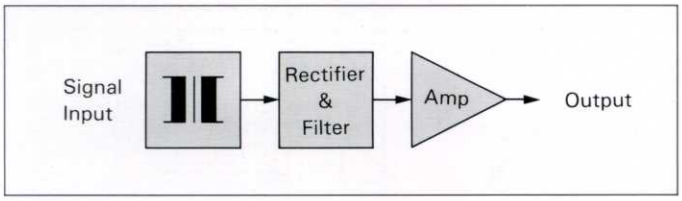
FEATURES

- Accuracy ±0.25% RO.
- Aux. power source is not required
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

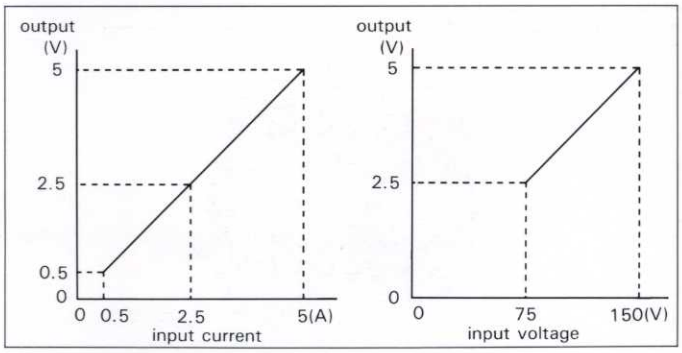
DESCRIPTION

Model: JASD-1 1φ CURRENT input
JASD-3 3φ CURRENT input
JVSD-1 1φ VOLTAGE input
JVSD-3 3φ VOLTAGE input

These transducer converting a sinusoidal alternating current or voltage into a dc output, proportional to the RMS value of input. These units are average sensing, but RMS calibrated for a sine wave with less than 1% distortion. The input signal is converted to a dc voltage which then feeds to a single stage amplifier and a dc output produced.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Model	Input Range	Measuring Range	Input Burden	Input Frequency
JASD	0~1A	0.1A~1A	≤1.5VA	50HZ±3HZ or 60HZ±3HZ
	0~5A	0.5A~5A		
JVSD	0~150V	75V~150V	≤1.5VA	
	0~300V	150V~300V		

Max. Input Over Capability: (Current input) 3×rated continuous
10×rated 10 sec.
50×rated 1 sec.
(Voltage input) 2×rated continuous

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥1KΩ	≤4Ω	≤0.5%RO. (peak)	≤800mS. 0~99%
0~5V	≥5KΩ	≤20Ω		
0~10V	≥10KΩ	≤40Ω		
0~1mA	0~5KΩ	≥5MΩ		

Accuracy ..... ±0.25% Rated of Output
Measuring range ..... (JASD) 10%~100%
(JVSD) 50%~100%
Output load effect ..... current output ≤0.1% RO.
voltage output ≤0.05% RO.
Magnetic field strength ..... ≤0.2% RO. 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤200PPM from 0 to 60°C
Max. relative humidity 95%
Isolation ..... Input/output/case
Insulation resistance ..... ≥100MΩ, DC500V
Dielectric withstand voltage ..... Between input/output/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 Min
Impulse withstand test ..... 5KV. 1.2×50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Perfomance ..... Design to comply with IEC 688
Safety requirement ..... IEC 414, BS5458.

ORDERING INFORMATION

JASD-1
JASD-3 – □ □ □

Model
JASD-1 1ϕ current input
JASD-3 3ϕ current input

Input Range
1: 0 ~ 1A
5: 0 ~ 5A
0: Option

Input Frequency
5: 50HZ ± 2HZ
6: 60HZ ± 2HZ
0: Option

Output Range
V1: 0 ~ 1V
V2: 0 ~ 5V
V4: 0 ~ 10V
A1: 0 ~ 1mA
OO: Option

JVSD-1
JVSD-3 – □ □ □

Model
JVSD-1 1ϕ voltage input
JVSD-3 3ϕ voltage input

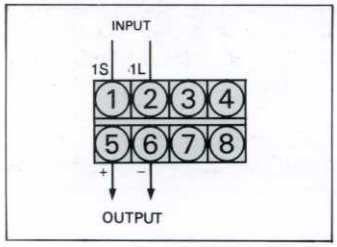
Input Range
1: 0 ~ 150V
3: 0 ~ 300V
0: Option

Input Frequency
5: 50HZ ± 2HZ
6: 60HZ ± 2HZ
0: Option

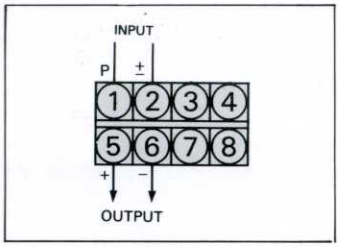
Output Range
V1: 0 ~ 1V
V2: 0 ~ 5V
V4: 0 ~ 10V
A1: 0 ~ 1mA
00: Option

CONNECTION DIAGRAM

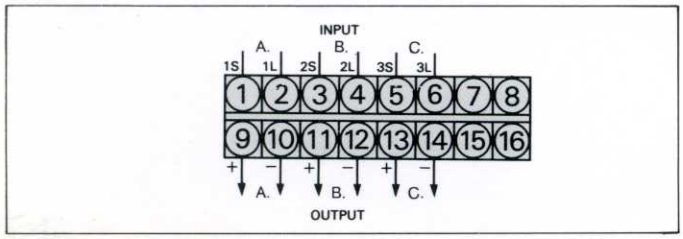
JASD-1



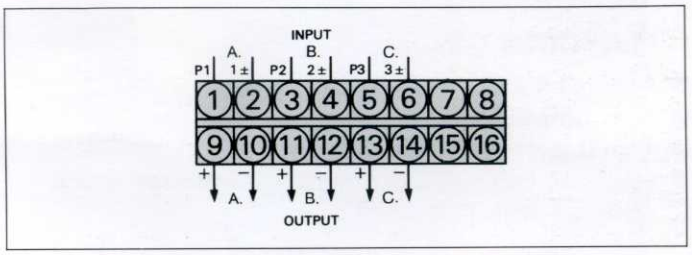
JVSD-1



JASD-3

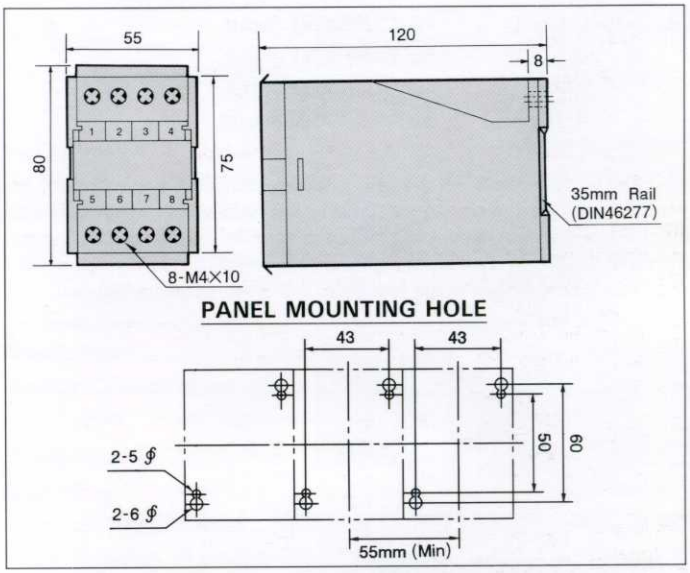


JVSD-3

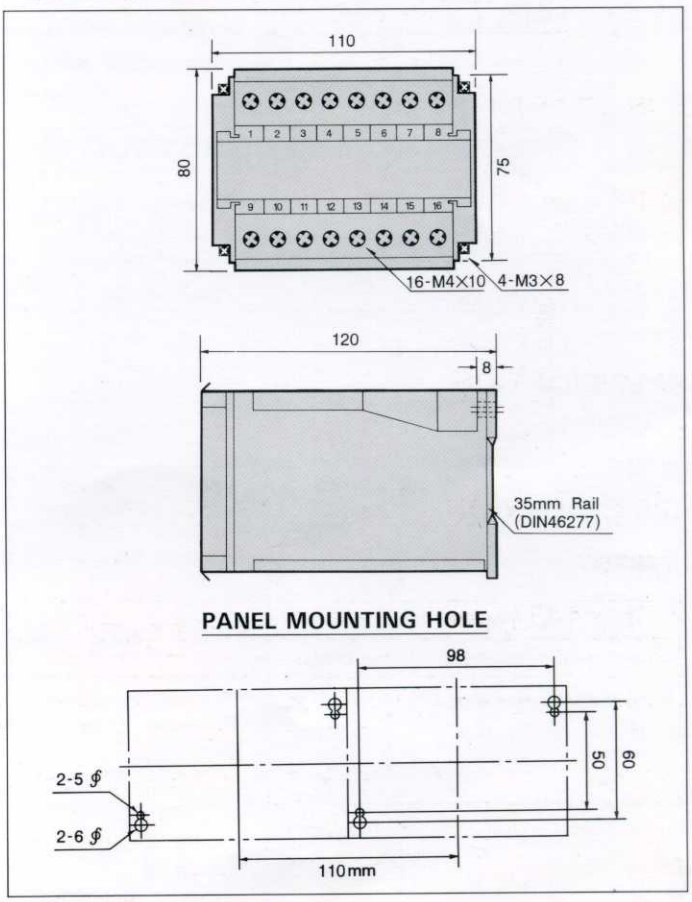


THE OUTSIDE DIMENSION(UNIT: mm)

• JASD-1, JVSD-1



• JASD-3, JVSD-3



ACTIVE POWER(WATT) TRANSDUCER

JWD SERIES

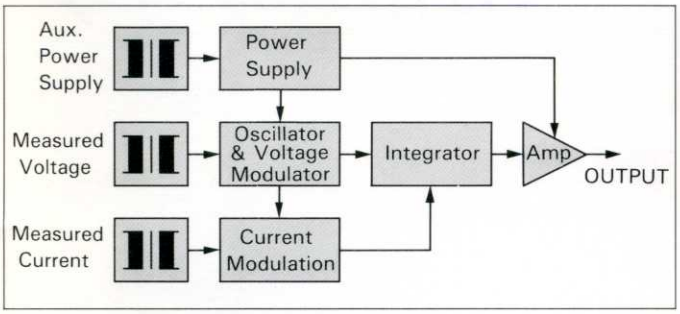
FEATURES

- Accuracy ±0.2% RO.
- Excellent long term stability (4~20mA, 750Ω)
- Precision measurement even for unbalance system
- Precision measurement even for distorted wave
- Measuring reverse watt is available
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

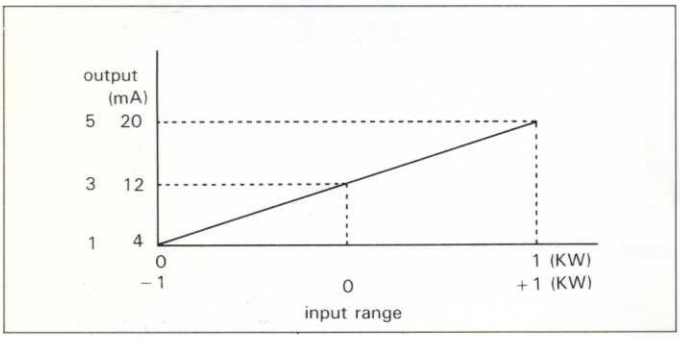
DESCRIPTION

Model: JWD-1 1φ2W, active power (WATT)
JWD-3 3φ3W, active power (WATT)
JWD-3A 3φ4W, active power (WATT)

A wide range of transducers to measure all forms of active power, in both balanced and unbalanced, single or 3 phase system. They utilize the well prove "time division multiplication" method of measuring instantaneous power over a wide range of input waveforms. The circuit diagram shown measured voltage is modulated by circuit of an oscillator. Square wave pulses from a multi-vibrator circuit, with a mark-space ratio varied by the measured voltage and amplitued by the measured current, are fed to an integrator an output amplification circuit. The dc signal produced is then directly proportional to power input-Watts.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range				Max. Input Over Capability
Circuit	Amp.	Voltage	Basic Watt	
Single Phase	5A	110V(120V)	0~0.5KW	Ampere: 3 × rated continuous 10 × rated 10 sec. 50 × rated 1 sec. Voltage: 2 × rated continuous
		220V(240V)	0~1KW	
3-Phase 3-Wire	5A	110V(120V)	0~1KW	
		220V(240V)	0~2KW	
3-Phase 4-Wire	5A	190/110V (208/120V)	0~1.5KW	
		380/220V (416/240V)	0~3KW	

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥500Ω	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
0~5V				
1~5V				
0~10V				
0~1mA	0~15KΩ	≥20MΩ		
0~10mA	0~1500Ω	≥5MΩ		
0~20mA	0~750Ω			
4~20mA				

* If DC SOURCE, load resistance: voltage output (≥1KΩ)
ampere output: 0~1mA (0~10KΩ), 0~10mA (0~1KΩ)
0~20mA, 4~20mA (0~500Ω)

Accuracy ..... ±0.2% Rated to Output
Input frequency ..... 50HZ±3HZ or 60HZ±3HZ
Input burden ..... ≤0.1VA (ampere input)
≤0.2VA (voltage input)
Aux.power supply ..... AC 110V±15%, 50/60HZ
AC 220V±15%, 50/60HZ
DC 24V, 48V, 110V, ±15%
Power effect ..... ≤0.1% RO.
Power consumption ..... ≤4VA, ≤DC 3W
Waveform effect ..... ≤0.2% RO. at distortion factor 15%
Output load effect ..... ≤0.05% RO.
Electromagnetic balance effect ..... ≤0.1% RO.
Mutual interference effect ..... ≤0.1% RO. between element
Magnetic field strength ..... ≤0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM from 0 to 60°C
≤60PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 min.
Impulse Withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C3790a) Common mode & differential mode
Performance ..... Designed to comply with IEC 688
Safety requirement ..... IEC 414, BS5458

ORDER INFORMATION

JWD-1
JWD-3 — [ ][ ][ ][ ][ ][ ]
JWD-3A

Model

JWD-1 for 1φ2W
JWD-3 for 3φ3W
JWD-3A for 3φ4W

Input Current

5: 5A
0: Option

Input voltage

1: 110V (120V)
2: 220V (240V)
3: 190V/110V (208V/120V)
4: 380V/220V (416V/240V)
0: Option

Input Frequency

5: 50HZ ± 3HZ
6: 60HZ ± 3HZ
0: Option

Output Range

V1: 0 ~ 1V(−1 ~ 0 ~ 1V)
V2: 0 ~ 5V(−5 ~ 0 ~ 5V)
V3: 1 ~ 5V(1 ~ 3 ~ 5V)
V4: 0 ~ 10V(0 ~ 5 ~ 10V)
A1: 0 ~ 1mA(−1 ~ 0 ~ 1mA)
A2: 0 ~ 10mA(−10 ~ 0 ~ 10mA)
A3: 0 ~ 20mA(0 ~ 10 ~ 20mA)
A4: 4 ~ 20mA(4 ~ 12 ~ 20mA)
OO: Option

Aux. Power Supply

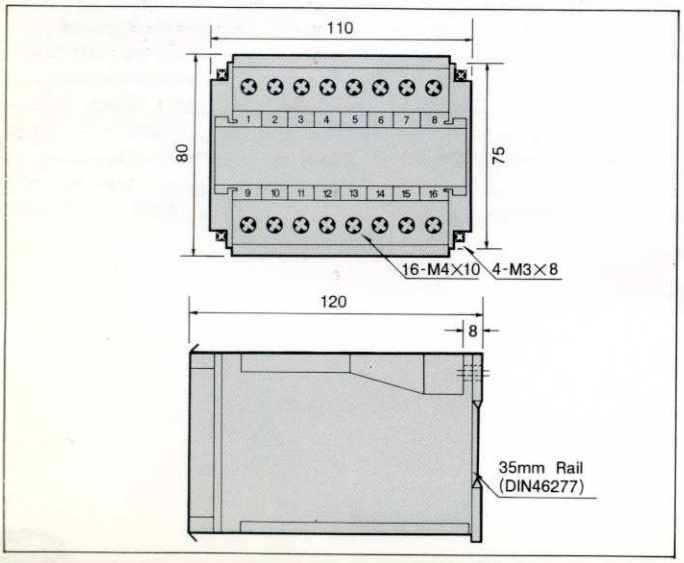
A: AC 110V
B: AC 220V
0: Option
C: DC 24V
D: DC 48V
E: DC 110V

Reverse Required

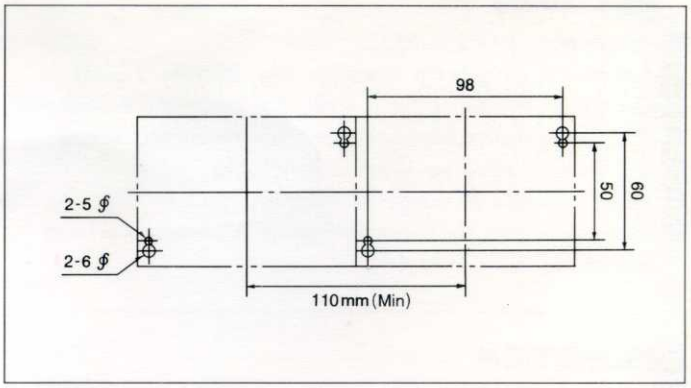
Y: Yes
N: No

* Remark: The value in parentheses is the output of Reverse Watt be required

THE OUTSIDE DIMENSION (UNIT: mm)

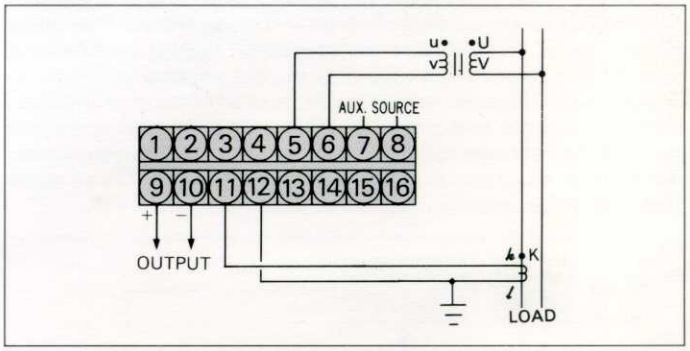


• PANEL MOUNTING HOLES (UNIT: mm)

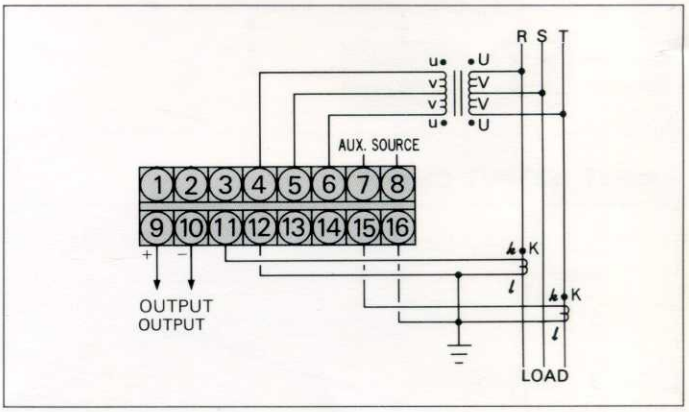


CONNECTION DIAGRAM

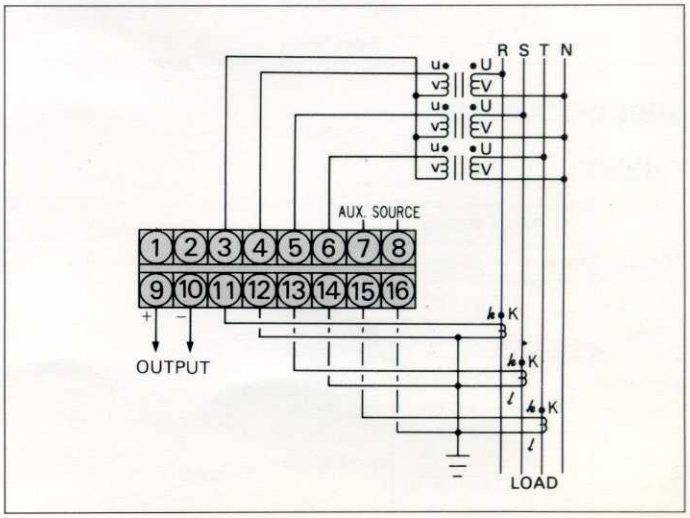
JWD-1 (1φ2W)



JWD-3 (3φ3W)



JWD-3A (3φ4W)



REACTIVE POWER(VAR) TRANSDUCER

JRD SERIES

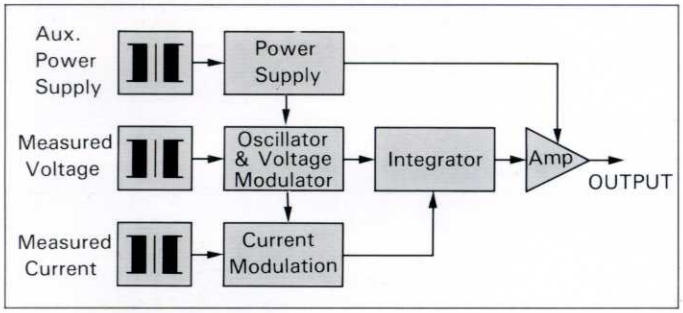
FEATURES

- Accuracy ±0.2% RO.
- Excellent long term stability (4~20mA, 750Ω)
- Precision measurement even for unbalance system
- Precision measurement even for distorted wave
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

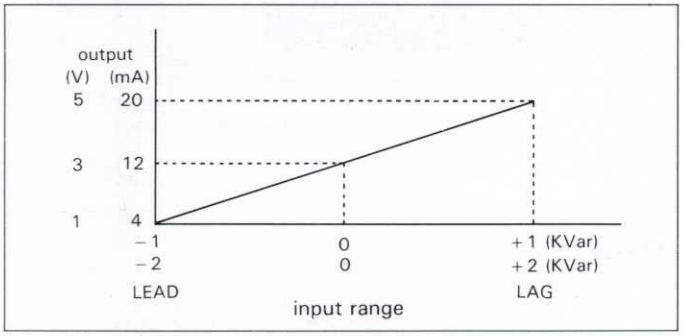
DESCRIPTION

Model: JRD-1 1φ2W, reactive power (VAR)
JRD-3 3φ3W, reactive power (VAR)
JRD-3A 3φ4W, reactive power (VAR)

A wide range of transducers to measure all forms of reactive power, in both balanced and unbalanced, single or 3 phase system. They utilize the well prove "time division multiplication" method of measuring instantaneous power over a wide range of input waveforms. The circuit diagram shown measured voltage is modulated by circuit of an oscillator. Square wave pulses from a multi-vibrator circuit, with a mark-space ratio varied by the measured voltage and amplitued by the measured current, are fed to an integrator an output amplification circuit. The dc signal produced is then directly proportional to power input-Vars.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range				Max. Input Over Capability
Circuit	Amp.	Voltage	Basic Var	
Single Phase	5A	110V(120V)	±0.5 KVar	Ampere: 3 × rated: continuous 10 × rated 10 sec. 50 × rated 1 sec. Voltage: 2 × rated continuous
		220V(240V)	± 1 KVar	
3-Phase 3-Wire	5A	110V(120V)	± 1 KVar	
		220V(240V)	± 2 KVar	
3-Phase 4-Wire	5A	190/110V (208/120V)	± 1.5 KVar	
		380/220V (416/240V)	± 3 KVar	

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
−1~0~1V	≥500Ω	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
−5~0~5V				
1~3~5V				
0~5~10V				
−1~0~1mA	0~15KΩ	≥20MΩ		
−10~0~10mA	0~1500Ω	≥5MΩ		
0~10~20mA	0~750Ω			
4~12~20mA				

* If DC SOURCE, load resistance: voltage output (≥1KΩ)
ampere output: 0~1mA (0~10KΩ), 0~10mA (0~1KΩ)
0~20mA, 4~20mA (0~500Ω)

Accuracy ..... ±0.2% Rated to Output
Input frequency ..... 50HZ±0.02HZ or 60HZ±0.02HZ
Input burden ..... ≤0.1VA (ampere input)
≤0.2VA (voltage input)
Aux.power supply ..... AC 110V±15%, 50/60HZ
AC 220V±15%, 50/60HZ
DC 24V, 48V, 110V, ±15%
Power effect ..... ≤0.1% RO.
Power consumption ..... ≤4VA, ≤DC 3W
Waveform effect ..... ≤0.2% RO. at distortion factor 15%
Output load effect ..... ≤0.05% RO.
Electromagnetic balance effect ..... ≤0.1% RO.
Mutual interference effect ..... ≤0.1% RO. between element
Magnetic field strength ..... ≤0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM from 0 to 60°C
≤60PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 min.
Impulse Withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C3790a) Common mode & differential mode
Performance ..... Designed to comply with IEC 688
Safety requirement ..... IEC 414, BS5458

ORDER INFORMATION

JRD-1 / JRD-3 / JRD-3A – [ ] [ ] [ ] [ ] [ ]

Model

JRD-1 for 1φ2W
JRD-3 for 3φ3W
JRD-3A for 3φ4W

Input Current

5: 5A
0: Option

Input voltage

1: 110V (120V)
2: 220V (240V)
3: 190V/110V (208V/120V)
4: 380V/220V (416V/240V)
0: Option

Input Frequency

5: 50HZ ± 0.02HZ
6: 60HZ ± 0.02HZ
0: Option

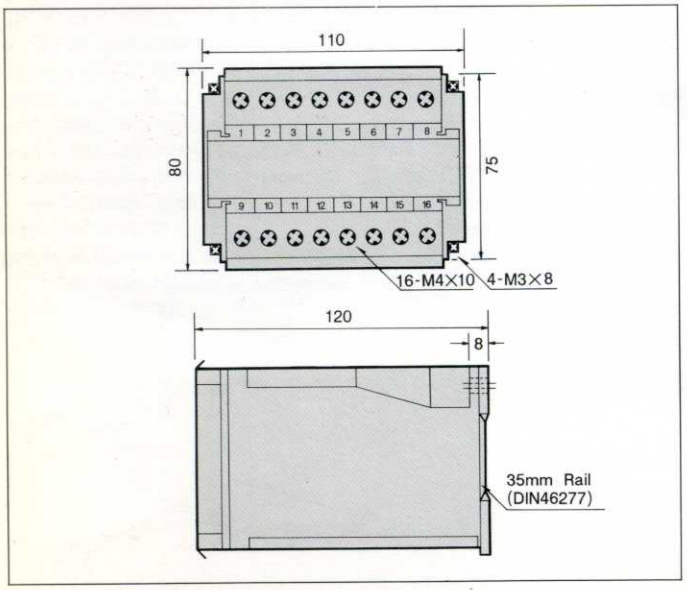
Output Range

V1: −1~0~1V
V2: −5~0~5V
V3: 1~3~5V
V4: 0~5~10V
A1: −1~0~1mA
A2: −10~0~10mA
A3: 0~10~20mA
A4: 4~12~20mA
00: Option

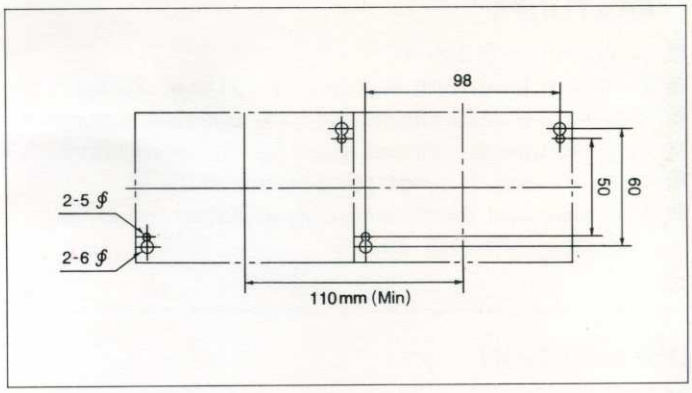
Aux. Power Supply

A: AC 110V
B: AC 220V
0: Option
C: DC 24V
D: DC 48V
E: DC 110V

THE OUTSIDE DIMENSION (UNIT: mm)

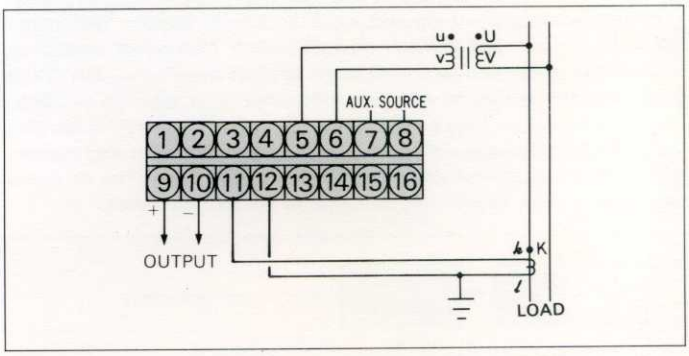


• PANEL MOUNTING HOLES (UNIT: mm)

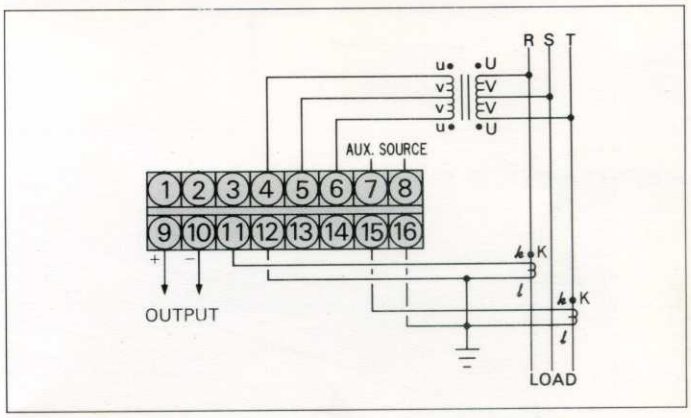


CONNECTION DIAGRAM

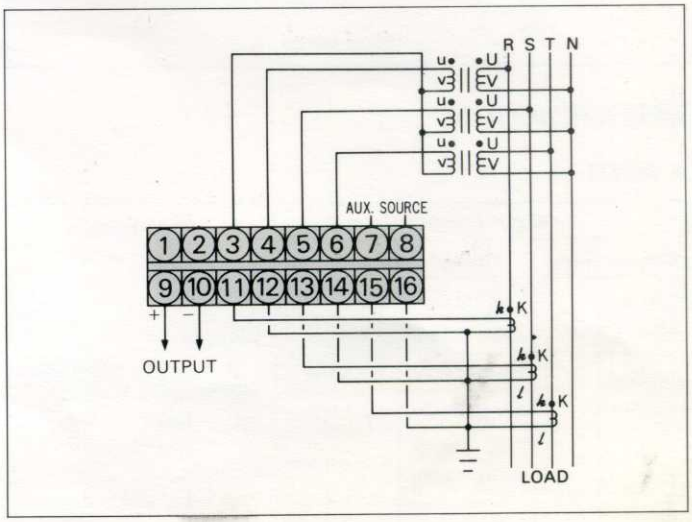
JRD-1 (1φ2W)



JRD-3 (3φ3W)



JRD-3A (3φ4W)



ACTIVE/REACTIVE POWER(WATT/VAR) TRANSDUCER

JWRD SERIES

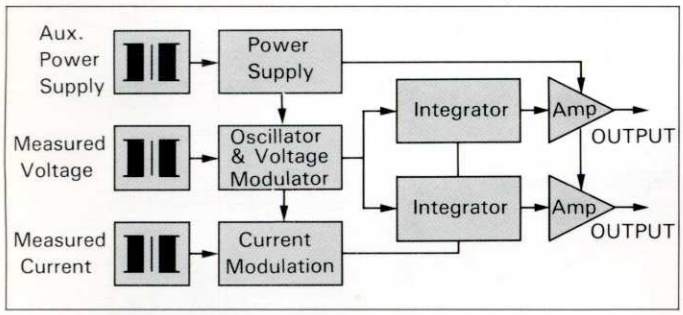
FEATURES

- Accuracy ±0.2% RO.
- Watt, Var packaged in one case
- Precision measurement for unbalance system
- Precision measurement even for distorted wave
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

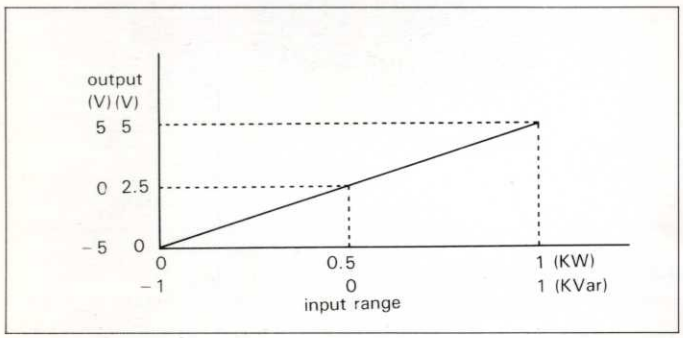
DESCRIPTION

Model: JWRD-1 1φ2W, WATT/VAR
JWRD-3 3φ3W, WATT/VAR
JWRD-3A 3φ4W, WATT/VAR

A wide range of transducers to measure all forms of WATT, VAR, in both balanced and unbalanced, single or 3 phase system. They utilize the well prove "time division multiplication" method of measuring instantaneous power over a wide range of input waveforms. The circuit diagram shown measured voltage is modulated by circuit of an oscillator. Square wave pulses from a multi-vibrator circuit, with a mark-space ratio varied by the measured voltage and amplitued by the measured current, are fed to an integrator an output amplification circuit. The dc signal produced is then directly proportional to power input-Watt & Vars.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range					Max. Input Over Capability
Circuit	Amp.	Voltage	Basic Watt	Basic Var	
Single Phase	5A	110V(120V)	0~0.5KW	±0.5KVar	AS JWD JRD
		220V(240V)	0~1KW	±1KVar	
3-Phase 3-Wire	5A	110V(120V)	0~1KW	±1KVar	
		220V(240V)	0~2KW	±2KVar	
3-Phase 4-Wire	5A	190/110V (208/120V)	0~1.5KW	±1.5KVar	
		380/220V (416/240V)	0~3KW	±3KVar	

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥1KΩ	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
0~5V				
1~5V				
0~10V				
0~1mA	0~10KΩ	≥20MΩ		
0~10mA	0~1KΩ	≥5MΩ		
0~20mA	0~500Ω			
4~20mA				

Accuracy ..... ±0.2% Rated to Output
Input frequency ..... Watt 50HZ±3HZ or 60HZ±3HZ
Var 50HZ±0.02HZ or 60HZ±0.02HZ
Input burden ..... ≤0.1VA (ampere input)
≤0.2VA (voltage input)
Aux. power supply ..... AC 110V±15%, 50/60HZ
AC 220V ±15%, 50/60HZ
DC 24V, 48V, 110V, ±15%
Power effect ..... ≤0.1% RO.
Power consumption ..... ≤4.5VA, ≤DC 3W
Waveform effect ..... ≤0.2% RO. at distortion factor 15%
Output load effect ..... ≤0.05% RO.
Electromagnetic balance effect ..... ≤0.1% RO.
Mutual interference effect ..... ≤0.1% RO.
Magnetic field strength ..... ≤0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... -10~70°C
Temperature coefficient ..... ≤100PPM from 0 to 60°C
≤60PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 min.
Impulse Withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC 688
Safety requirement ..... IEC 414, BS5458

ORDER INFORMATION

JWRD-1
JWRD-3
JWRD-3A – [ ][ ][ ][ ][ ][ ]

Model

JWRD-1 for 1φ2W
JWRD-3 for 3φ3W
JWRD-3A for 3φ4W

Input Current

5: 5A
0: Option

Input voltage

1: 110V (120V)
2: 220V (240V)
3: 190V/110V (208V/120V)
4: 380V/220V (416V/240V)
0: Option

Input Frequency

5: 50HZ(WATT: 50HZ ± 3HZ)
6: 60HZ(WATT: 60HZ ± 3HZ)
0: Option

Output Range

V1: 0 ~ 1V(−1 ~ 0 ~ 1V)
V2: 0 ~ 5V(−5 ~ 0 ~ 5V)
V3: 1 ~ 5V(1 ~ 3 ~ 5V)
V4: 0 ~ 10V(0 ~ 5 ~ 10V)
A1: 0 ~ 1mA (−1 ~ 0 ~ 1mA)
A2: 0 ~ 10mA (−10 ~ 0 ~ 10mA)
A3: 0 ~ 20mA (0 ~ 10 ~ 20mA)
A4: 4 ~ 20mA (4 ~ 12 ~ 20mA)
OO: Option

Aux. Power Supply

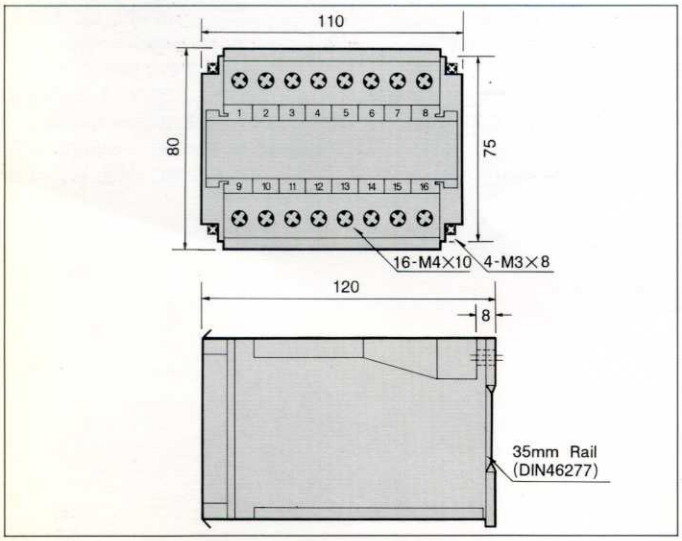
A: AC 110V
B: AC 220V
0: Option
C: DC 24V
D: DC 48V
E: DC 110V

Reverse Required

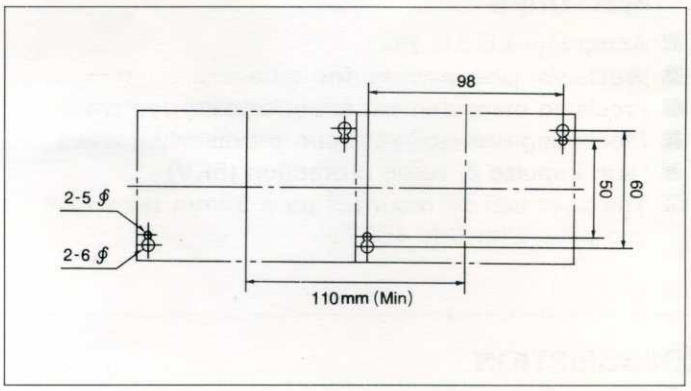
Y: Yes
N: No

* Remark: The value in parenthese is VAR output or Reverse watt output.

THE OUTSIDE DIMENSION (UNIT: mm)

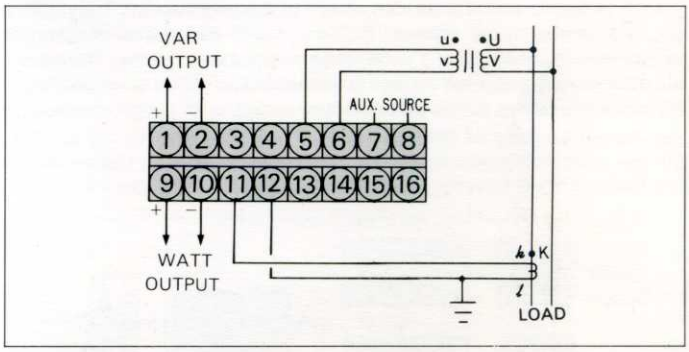


• PANEL MOUNTING HOLES (UNIT: mm)

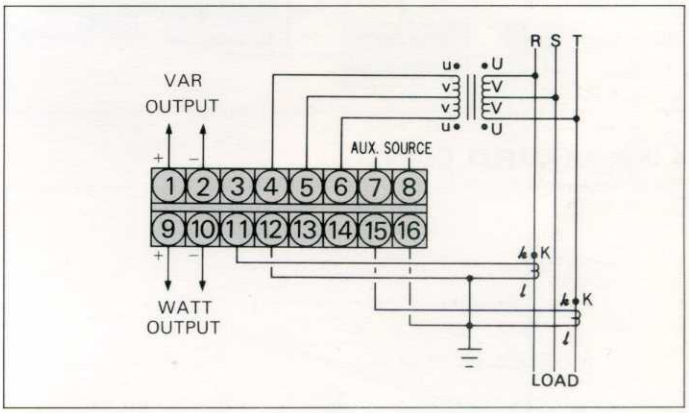


CONNECTION DIAGRAM

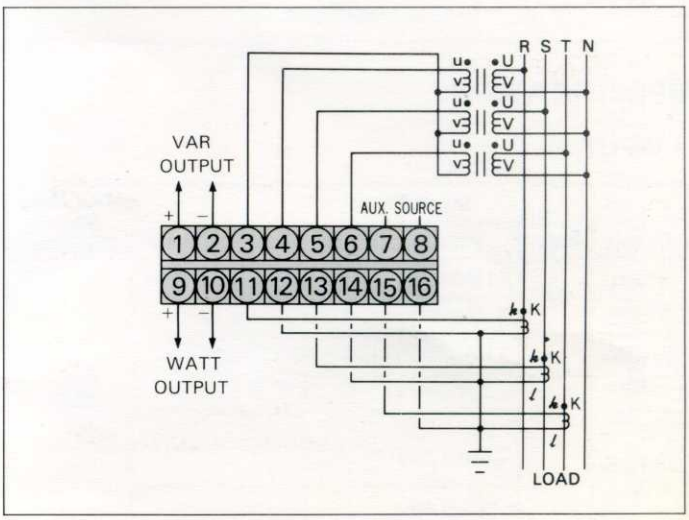
JWRD-1 (1φ2W)



JWRD-3 (3φ3W)



JWRD-3A (3φ4W)



WATTHOUR TRANSDUCER

JHD SERIES

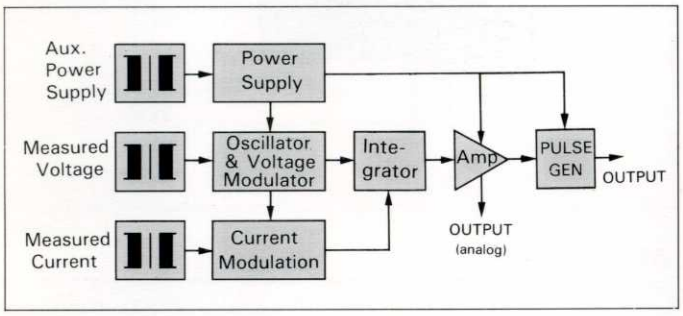
FEATURES

- Accuracy ±0.2% RD.
- Precision measurement for unbalance system
- Precision measurement even for distorted wave
- Measuring reverse watthour is available
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

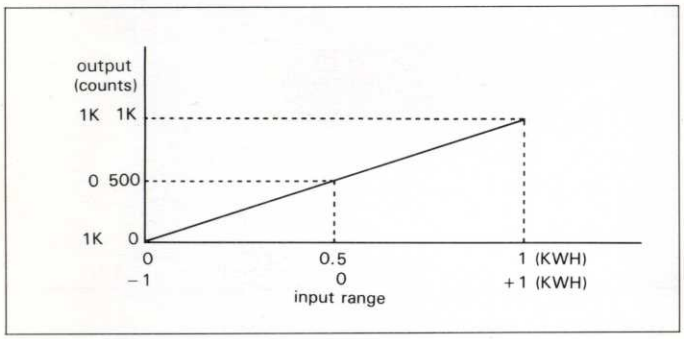
DESCRIPTION

Model: JHD-1 1φ2W, WATTHOUR
JHD-3 3φ3W, WATTHOUR
JHD-3A 3φ4W, WATTHOUR

For kilowatt-hour-measurement, we build in another Linear integrator Circuit. This circuit accepts signal from Watts portion and integrates with respect to time, to produce a pulse output via volt free contacts, result in pulses proportional to kilowatt-hours.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range				Max. Input Over Capability
Circuit	Amp.	Voltage	Basic KWH	
Single Phase	5A	110V(120V)	0 ~ 0.5KWH	Ampere: 3 × rated continuous, 10 × rated 10 sec., 50 × rated 1 sec. Voltage: 2 × rated continuous
		220V(240V)	0 ~ 1KWH	
3-Phase 3-Wire	5A	110V(120V)	0 ~ 1KWH	
		220V(240V)	0 ~ 2KWH	
3-Phase 4-Wire	5A	190/110V (208/120V)	0 ~ 1.5KWH	
		380/220V (416/240V)	0 ~ 3KWH	

• OUTPUT

Output Range		Output Mode		
	100 counts	Pulse	Open Collect	SPDT Relay Contacts
per 1KWH	1000 counts			
	10000 counts	DC 15V, 10mA	DC 30V, 100mA	AC 110V, 0.5A DC 24V, 1A
	100000 counts			

Accuracy ..... ±0.2% RD.
Input frequency ..... 50HZ ± 3HZ or 60HZ ± 3HZ
Input burden ..... ≤0.1VA (ampere input)
≤0.2VA (Voltage input)
Aux. power supply ..... AC 110V ± 15%, 50HZ/60HZ
AC 220V ± 15%, 50HZ/60HZ
DC 24V, 48V, 110V, ± 15%,
Power effect ..... ≤0.1% RO.
Power consumption ..... ≤4VA, ≤DC 3W
Waveform effect ..... ≤0.2% RD. at distortion factor 15%
Electromagnetic balance effect ..... ≤0.1% RO.
Mutual interference effect ..... ≤0.1% RO. between element.
Magnetic field strength ..... 0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0 ~ 60°C
Storage temperature range ..... −10 ~ 70°C
Temperature coefficient ..... ≤100PPM, 25°C ± 10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 Min.
Impulse withstand test ..... 5KV, 1.2 × 50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirement IEC414, BS5458

ORDER INFORMATION

JHD-1
JHD-3
JHD-3A – [ ][ ][ ][ ][ ][ ][ ]

Model

JHD-1	for 1φ2W
JHD-3	for 3φ3W
JHD-3A	for 3φ4W

Input Current

5: 5A
0: Option

Input Voltage

1: 110V (120V)
2: 220V (240V)
3: 190V/110V (208V/120V)
4: 380V/220V (416V/240V)
0: Option

Input Frequency

5: 50HZ ± 3HZ
6: 60HZ ± 3HZ
0: Option

Output Range (per KWH)

1: 100 counts
2: 1000 counts
3: 10000 counts
4: 100000 counts
5: Option

Output Mode

P: Pulse
C: Open collect
R: Relay contact

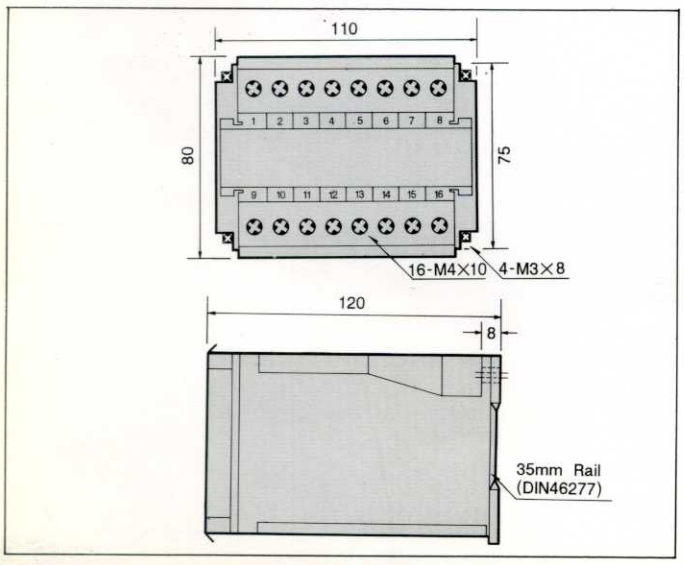
Aux. Power Supply

A: AC 110V	C: DC 24V
B: AC 220V	D: DC 48V
0: Option	E: DC 110V

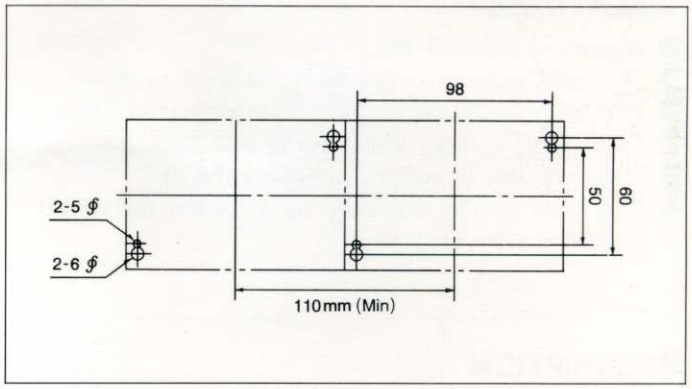
Reverse Required

Y: Yes N: No

THE OUTSIDE DIMENSION (UNIT: mm)

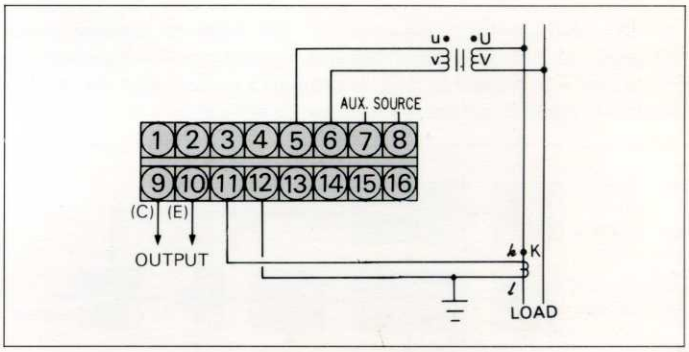


• PANEL MOUNTING HOLES (UNIT: mm)

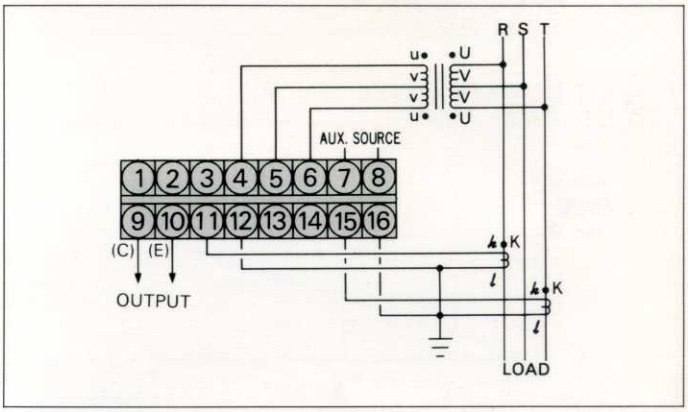


CONNECTION DIAGRAM

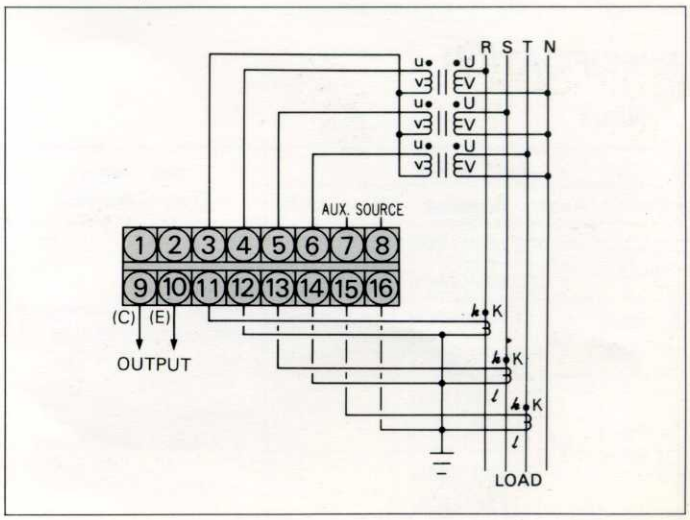
JHD-1 (1φ2W)



JHD-3 (3φ3W)



JHD-3A (3φ4W)



VARHOUR TRANSDUCER

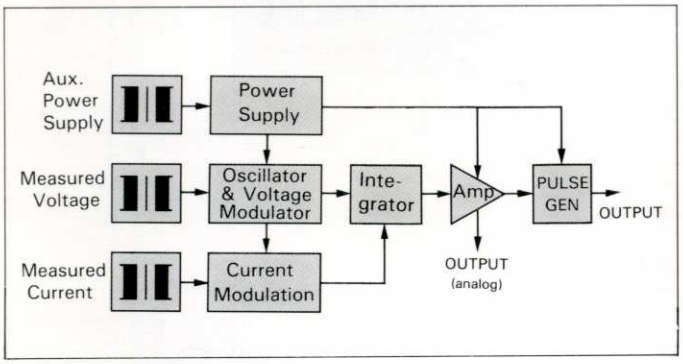
FEATURES

- Accuracy ±0.2% RD.
- Precision measurement for unbalance system
- Precision measurement even for distorted wave
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

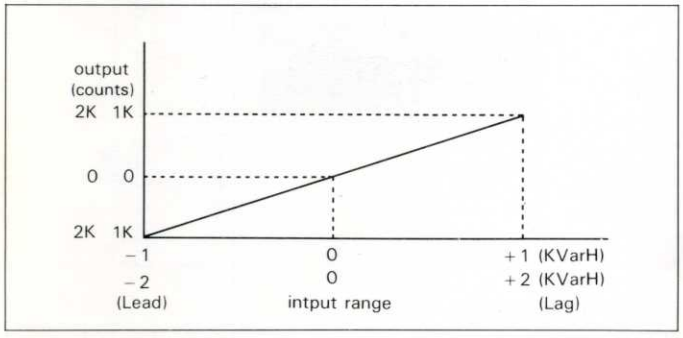
DESCRIPTION

Model: JRHD-1 1φ2W, VARHOUR
JRHD-3 3φ3W, VARHOUR
JRHD-3A 3φ4W, VARHOUR

For kilovar-hour-measurement, we build in another Linear integrator Circuit. This circuit accepts signal from Vars portion and integrates with respect to time, to produce a pulse output via volt free contacts, result in pulse proportional to kilovar-hours.



• INPUT-OUTPUT CURVE



SPECIFICATION

• INPUT

Input Range				Max. Input Over Capability
Circuit	Amp.	Voltage	Basic KvarH	
Single Phase	5A	110V(120V)	0 ~ ±0.5KVarH	Ampere: 3 × rated: continuous 10 × rated 10 sec. 50 × rated 1 sec. Voltage: 2 × rated continuous
		220V(240V)	0 ~ ±1KVarH	
3-Phase 3-Wire	5A	110V(120V)	0 ~ ±1KVarH	
		220V(240V)	0 ~ ±2KVarH	
3-Phase 4-Wire	5A	190/110V (208/120V)	0 ~ ±1.5KVarH	
		380/220V (416/240V)	0 ~ ±3KVarH	

• OUTPUT

Output Range		Output Mode		
per 1KVarH	100 counts	Pulse	Open Collect	SPDT Relay Contacts
	1000 counts			
	10000 counts	DC 15V, 10mA	DC 30V, 100mA	AC 110V, 0.5A DC 24V, 1A
	100000 counts			

Accuracy ..... ±0.2% RD.
Input frequency ..... 50HZ±0.02HZ or 60HZ±0.02HZ
Input burden ..... ≤0.1VA (ampere input)
≤0.2VA (Voltage input)
Aux. power supply ..... AC 110V±15%, 50HZ/60HZ
AC 220V±15%, 50HZ/60HZ
DC 24V, 48V, 110V, ±15%,
Power effect ..... ≤0.1% RO.
Power consumption ..... ≤4VA, ≤DC 3W
Waveform effect ..... ≤0.2% RD. at distortion factor 15%
Electromagnetic balance effect ..... ≤0.1% RO.
Mutual interference effect ..... ≤0.1% RO. between element.
Magnetic field strength ..... 0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 Min.
Impulse withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirement IEC414, BS5458

ORDER INFORMATION

JRHD-1
JRHD-3
JRHD-3A

Model

JRHD-1 for 1φ2W
JRHD-3 for 3φ3W
JRHD-3A for 3φ4W

Input Current

5: 5A
0: Option

Input Voltage

1: 110V (120V)
2: 220V (240V)
3: 190V/110V (208V/120V)
4: 380V/220V (416V/240V)
0: Option

Input Frequency

5: 50HZ
6: 60HZ
0: Option

Output Range (per KVarH)

1: 100 counts
2: 1000 counts
3: 10000 counts
4: 100000 counts
5: Option

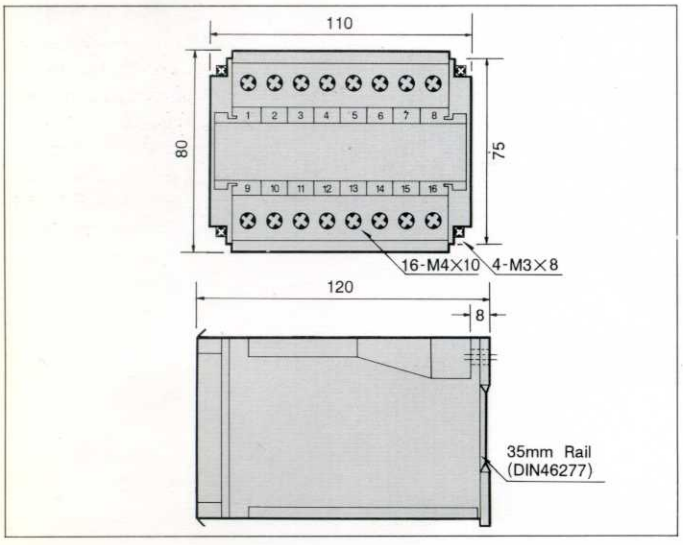
Output Mode

P: Pulse
C: Open collect
R: Relay contact

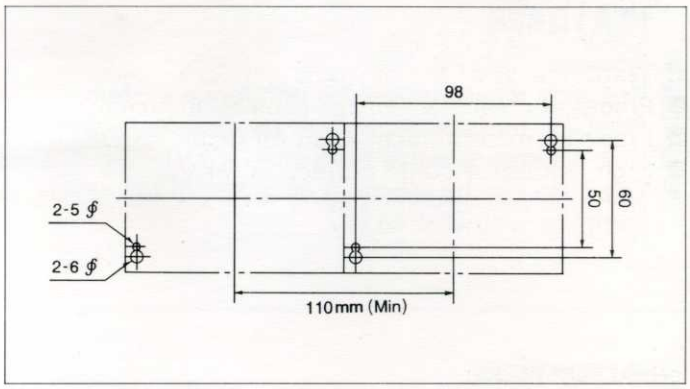
Aux. Power Supply

A: AC 110V
B: AC 220V
0: Option
C: DC 24V
D: DC 48V
E: DC 110V

THE OUTSIDE DIMENSION (UNIT: mm)

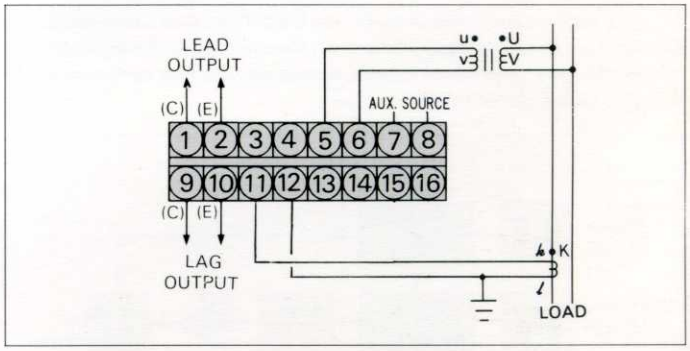


• PANEL MOUNTING HOLES (UNIT: mm)

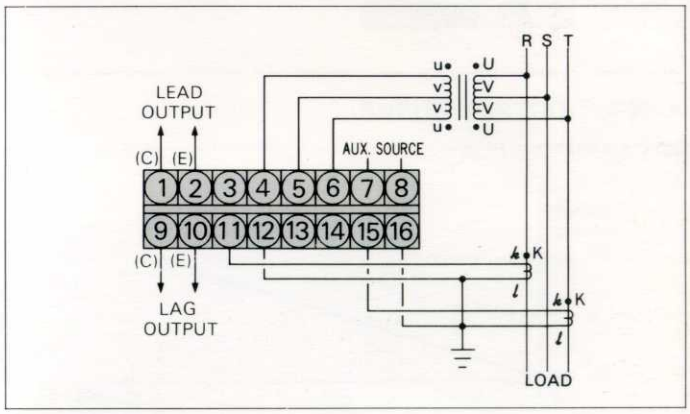


CONNECTION DIAGRAM

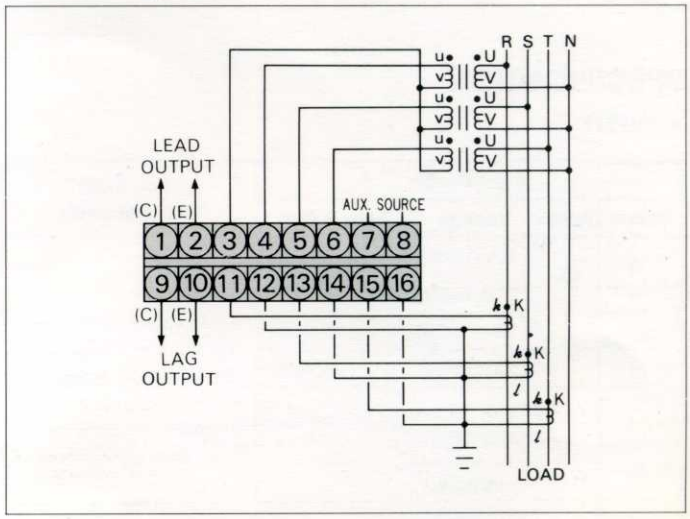
JRHD-1 (1φ2W)



JRHD-3 (3φ3W)



JRHD-3A (3φ4W)



WATTHOUR/WATT TRANSDUCER

JHWD SERIES

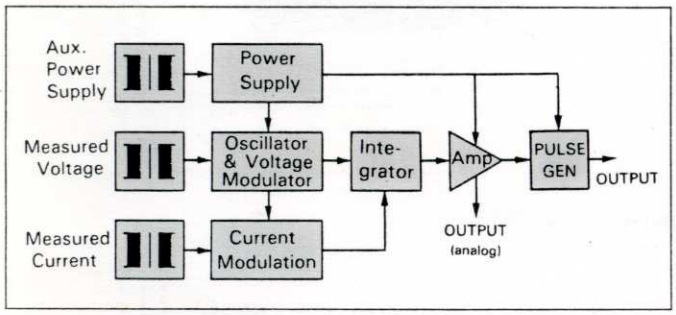
FEATURES

- Accuracy ±0.2% RO.
- Watthour, Watt packaged in one case
- Precision measurement for unbalance system
- Precision measurement even for distorted wave
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

DESCRIPTION

Model: JHWD-1 1φ2W, WATTHOUR/WATT
JHWD-3 3φ3W, WATTHOUR/WATT
JHWD-3A 3φ4W, WATTHOUR/WATT

For kilowatt-hour-measurement, we build in another Linear integrator Circuit. This circuit accepts signal from Watts portion and integrates with respect to time, to produce a pulse output via volt free contacts, result in pulse proportional to kilowatt-hours.



SPECIFICATION

• INPUT

Input Range				
Circuit	Amp.	Voltage	Basic KWH	Basic Watt
Single Phase	5A	110V(120V)	0~0.5KWH	0~0.5KW
		220V(240V)	0~1KWH	0~1KW
3-phase 3-wire	5A	110V(120V)	0~1KWH	0~1KW
		220V(240V)	0~2KWH	0~2KW
3-phase 4-wire	5A	190V/110V (208V/120V)	0~1.5KWH	0~1.5KW
		380V/220V (416V/240V)	0~3KWH	0~3KW

• OUTPUT FOR WATTHOUR

Output Range		Output Mode		
per 1KWH	100 counts	Pulse	Open Collect	SPDT Relay Contacts
	1000 counts			
	10000 counts	DC 15V, 10mA	DC 30V, 100mA	AC 110V, 0.5A DC 24V, 1A
	100000 counts			

• OUTPUT FOR WATT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥1KΩ	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
0~5V				
1~5V				
0~10V				
0~1mA	0~10KΩ	≥20MΩ		
0~10mA	0~1KΩ	≥5MΩ		
0~20mA	0~500Ω			
4~20mA				

Accuracy ..... WATT, ±0.2% Rated of Output
WATTHOUR ±0.2% RD.
Input frequency ..... 50HZ±3HZ or 60HZ±3HZ
Input burden ..... ≤0.1VA (ampere input)
≤0.2VA (Voltage input)
Aux. power supply ..... AC 110V±15%, 50HZ/60HZ
AC 220V±15%, 50HZ/60HZ
DC 24V, 48V, 110V, ±15%,
Power effect ..... ≤0.1% RO.
Power consumption ..... ≤4.5VA, ≤DC 3W
Waveform effect ..... ≤0.2% RO. at distortion factor 15%
Electromagnetic balance effect ..... ≤0.1% RO.
Mutual interference effect ..... ≤0.1% RO. between element.
Magnetic field strength ..... 0.2% RO., 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 Min.
Impulse withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirement IEC414, BS5458

ORDER INFORMATION

JHWD-1
JHWD-3
JHWD-3A – [ ][ ][ ][ ][ ][ ][ ]

Model

JHWD-1 for 1φ2W
JHWD-3 for 3φ3W
JHWD-3A for 3φ4W

Input Range

5: 5A
0: Option

Input Voltage

1: 110V (120V) 3: 190V/110V
2: 220V (240V) 4: 380V/220V
0: Option

Input Frequency

5: 50HZ ± 3HZ 6: 60HZ ± 3HZ
0: Option

Output Range (Watt)

V1: 0 ~ 1V A1: 0 ~ 1mA
V2: 0 ~ 5V A2: 0 ~ 10mA
V3: 1 ~ 5V A3: 0 ~ 20mA
V4: 0 ~ 10V A4: 4 ~ 20mA
0: Option

Output Range (per KWH)

1: 100 counts 3: 10000 counts
2: 1000 counts 4: 100000 counts
0: Option

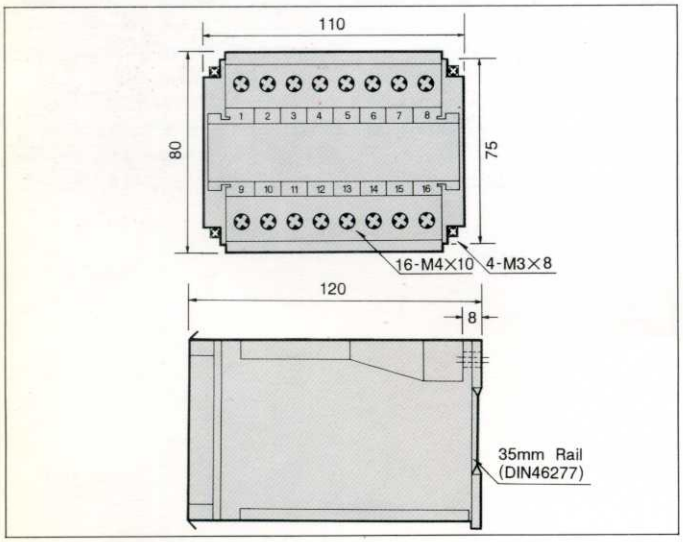
Output Mode (KWH)

P: Pulse C: Open collect
R: Relay contace

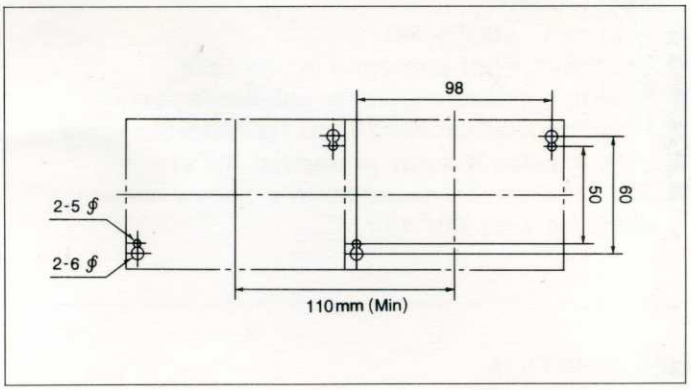
Aux. Power Supply

A: AC 110V C: DC 24V
B: AC 220V D: DC 48V
0: Option E: DC 110V

THE OUTSIDE DIMENSION (UNIT: mm)

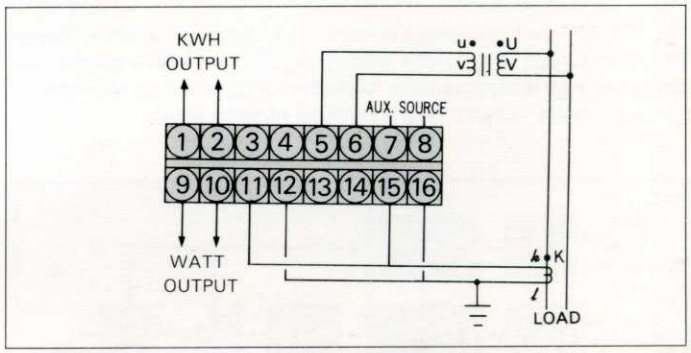


• PANEL MOUNTING HOLES (UNIT: mm)

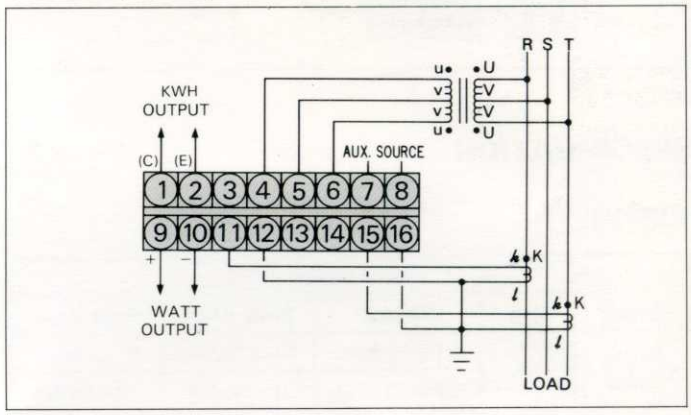


CONNECTION DIAGRAM

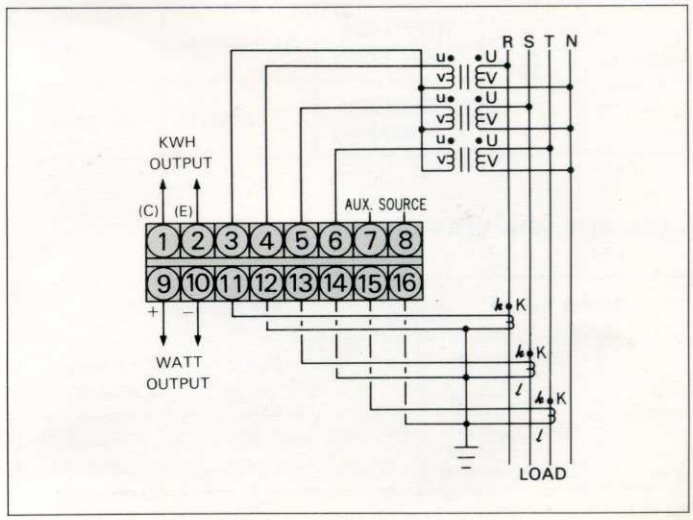
JHWD-1 (1φ2W)



JHWD-3 (3φ3W)



JHWD-3A (3φ4W)



POWER FACTOR, PHASE ANGLE TRANSDUCER

JPD
JUD

FEATURES

- Accuracy ±0.5%RO. (JPD), ±1° (JUD)
- Excellent long term stability (4~20mA, 750Ω)
- Precision measurement even for distorted wave
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

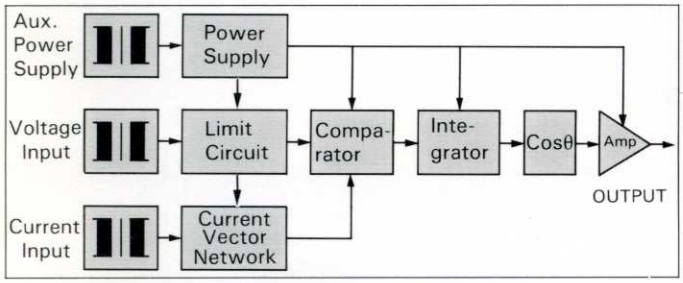
DESCRIPTION

Model:

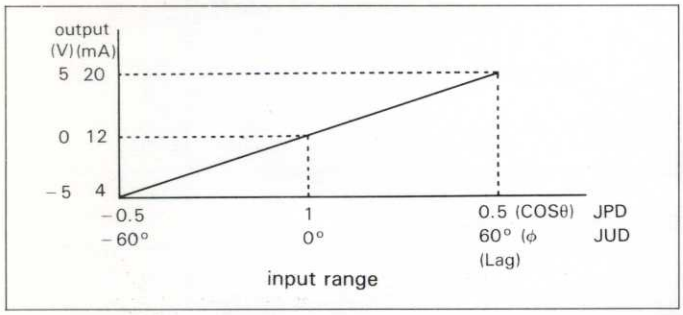
JPD-1	1φ2W, POWER FACTOR (COSθ)
JPD-3	3φ3W, POWER FACTOR (COSθ)
JPD-3A	3φ4W, POWER FACTOR (COSθ)
JUD-1	1φ2W, PHASE ANGLE (φ)
JUD-3	3φ3W, PHASE ANGLE (φ)
JUD-3A	3φ4W, PHASE ANGLE (φ)

These transducers require an auxiliary power supply and offer a highly accurate method of measuring the phase angle of the input. They have a full four quadrant capability. The output is a linear function of the phase angle between the two inputs (which can be current or voltage), the circuit can also be used as power factor transducer only added a COSθ circuit.

Output amplifier provides constant voltage or current output. Output is unaffected by load resistance provided it is within the specified range.



• INPUT-OUTPUT CURVE



SPECIFCATION

• INPUT

Input Range				Max. Input Over Capability
Circuit	Amp.	Voltage	Range	
Single Phase	5A	110V(120V)	(Lead) (Lag) 0.5~1~0.5 or (Lead) (Lag) 60°~0~60°	Ampre: 3 × rated continuous 10 × rated 10 sec. 50 × rated 1 sec. Voltage: 2 × rated continuous
		220V(240V)		
3-phase 3-wire	5A	110V(120V)		
		220V(240V)		
3-phase 4-wire	5A	190V/110V (208V/120V)		
		380V/220V (416V/240V)		

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
−1~0~1V	≥500Ω	≤0.05Ω	≤0.5% RO. (peak)	≤400mS. 0~99%
−5~0~5V				
1~3~5V				
0~5~10V				
−1~0~1mA	0~15KΩ	≥20MΩ		
−10~0~10mA	0~1500Ω	≥5MΩ		
0~10~20mA	0~750Ω			
4~12~20mA				

* If DC SOURCE, load resistance: voltage output (≥1KΩ)
ampere output: 0~1mA (0~10KΩ), 0~10mA (0~1KΩ)
0~20mA, 4~20mA (0~500Ω)

Accuracy ..... ±0.5% RO. ±0.3° (JPD) ±1° (JUD)
Input frequency ..... 50HZ±3HZ or 60HZ±3HZ
Input burden ..... ≤0.1VA (ampere input) ≤0.2VA (Voltage input)
Aux. power supply ..... AC 110V±15%, 50HZ/60HZ AC 220V±15%, 50HZ/60HZ DC 24V, 48V, 110V, ±15%
Power effect ..... ≤0.01 PF (PD), ≤1° (UD)
Power consumption ..... ≤4VA, ≤DC 3W
Waveform effect ..... ≤0.02PF (PD), ≤1° (UD) at distortion factor, 15%
Output load effect ..... ≤0.05% RO.
Magnetic field strength ..... ≤0.02PF (PD), ≤1° (UD), 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤0.02PF (PD), ≤1° (UD)
Max. relative humidity 95%
Isolation ..... Input/output/power/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Input/output/power/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 Min.
Impulse withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirement IEC414, BS5458

ORDER INFORMATION

JPD-1
JPD-3
JPD-3A
JUD-1
JUD-3
JUD-3A

Model

JPD-1 for 1φ2W, power factor
JPD-3 for 3φ3W, power factor
JPD-3A for 3φ4W, power factor
JUD-1 for 1φ2W, phase angle
JUD-3 for 3φ3W, phase angle
JUD-3A for 3φ4W, phase angle

Input Current

5: 5A
0: Option

Input Voltage

1: 110V (120V)
2: 220V (240V)
3: 190V/110V (208V/120V)
4: 380V/220V (416V/240V)
0: Option

Input Frequency

5: 50HZ
6: 60HZ
0: Option

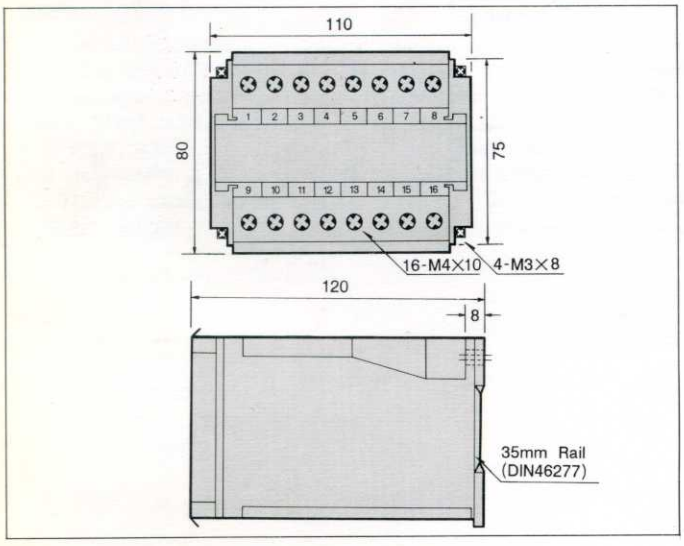
Output Range

V1: −1~0~1V
V2: −5~0~5V
V3: 1~3~5V
V4: 0~5~10V
A1: −1~0~1mA
A2: −10~0~10mA
A3: 0~10~20mA
A4: 4~12~20mA
00: Option

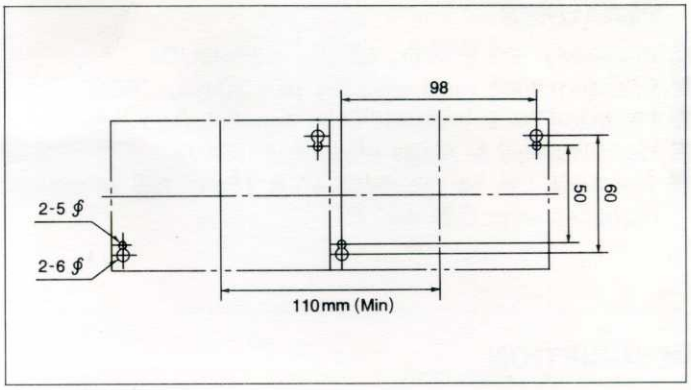
Aux. Power Supply

A: AC 110V
B: AC 220V
0: Option
C: DC 24V
D: DC 48V
E: DC 110V

THE OUTSIDE DIMENSION (UNIT: mm)

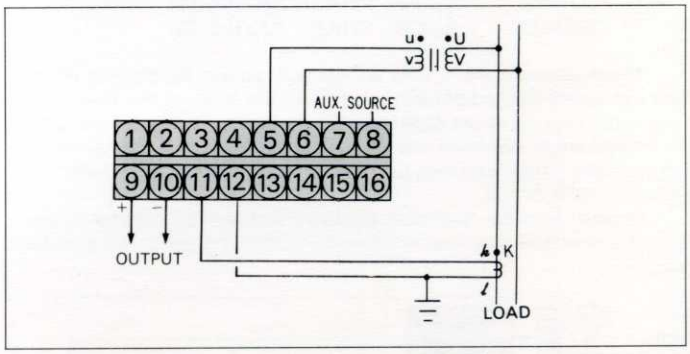


• PANEL MOUNTING HOLES (UNIT: mm)

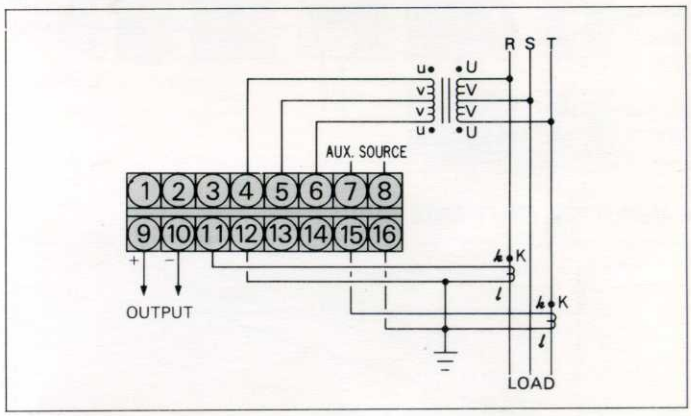


CONNECTION DIAGRAM

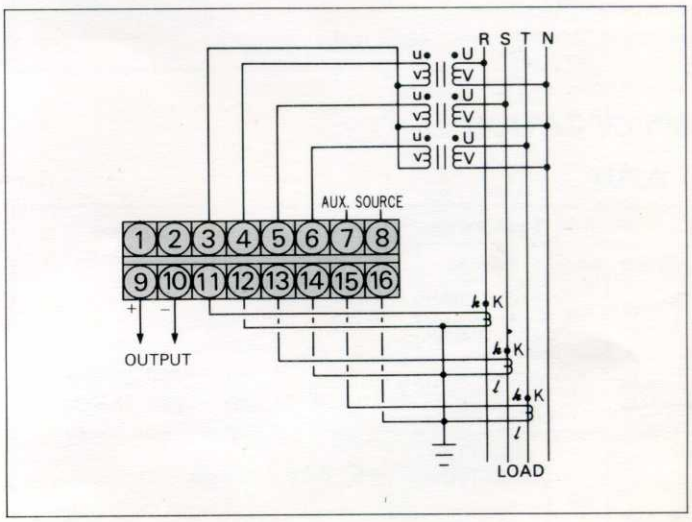
JPD-1, JUD-1 (1φ2W)



JPD-3, JUD-3 (3φ3W)



JPD-3A, JUD-3A (3φ4W)



FEATURES

- Accuracy ±0.025% RO.
- Self powered
- Excellent long term stability (4~20mA, 750Ω)
- High impulse & surge protection (5KV)
- The case can be mounted on a 35mm rail which complies with DIN 46277

DESCRIPTION

JFD-1 transducer to measure power frequency and provide a DC output directly proportional to the change of input within the specified span. The input signal is shapped to square wave by the wave shappers circuit. The duty cycle of the square wave is change with the frequency of the input signal. Then the square wave is fed into an integrated circuit and the produced DC output is proportional to the input frequency.

SPECIFICATION

• INPUT

Input Range		Input Burden	Max. Input Over Capability
Frequency	Voltage		
45~55HZ	110V±20%	≤3.5VA	1.2 × rated continuous
55~65HZ	or		2 × rated 10 sec.
45~65HZ	220V±20%		4 × rated 2 sec.

• OUTPUT

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0~1V	≥500Ω	≤0.05Ω	≤0.5% RO. (peak)	≤1 sec. 0~99%
0~5V				
1~5V				
0~10V				
0~1mA	0~15KΩ	≥20MΩ		
0~10mA	0~1500Ω	≥5MΩ		
0~20mA	0~750Ω			
4~20mA				

Accuracy ..... ±0.025% Rated of Output
Output load effect ..... ≤0.025% RO.
Magnetic field strength ..... ≤0.025% RO. 400A/M
Span adjustment range ..... ≥5% RO.
Zero adjustment range ..... ≥1% RO.
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature coefficient ..... ≤100PPM from 0 to 60°C
≤60PPM, 25°C±10°C
Max. relative humidity 95%
Isolation ..... Input/output/case
Insulation resistance ..... ≥100MΩ, DC 500V
Dielectric withstand voltage ..... Between input/output/case
(IEC 414, 688, ANSI C37) AC 2.6KV, 60HZ, 1 Min.
Impulse withstand test ..... 5KV, 1.2×50μS
(IEC 255-4, ANSI C37 90a) Common mode & differential mode
Performance ..... Designed to comply with IEC688
Safety requirement IEC414, BS5458

ORDER INFORMATION

JFD-1 − □ □ □

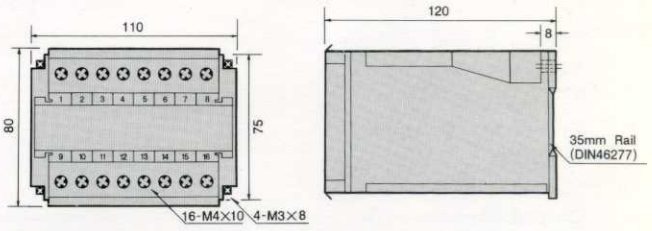
Model

Input Frequency
45: 45~55HZ
56: 55~65HZ
46: 45~65HZ
00: Option

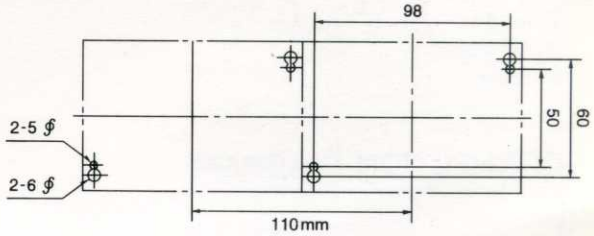
Input Voltage
1: 110V
2: 220V
0: Option

Output Range
V1: 0~1V A1: 0~1mA
V2: 0~5V A2: 0~10mA
V3: 1~5V A3: 0~20mA
V4: 0~10V A4: 4~20mA
00: Option

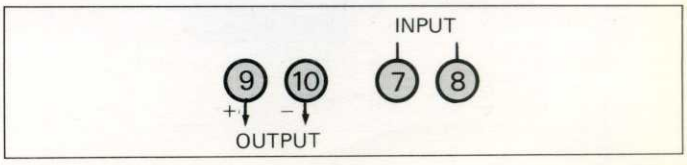
THE OUTSIDE DIMENSION (UNIT: mm)



• PANEL MOUNTING HOLE



CONNECTION DIAGRAM



PULSE SUPPLY

FEATURES

- Accuracy ±0.2% RO
- Wide Selection of output ranges
- Excellent long term stability
- Kow output ripple
- High immunity to extemal noise

SPECIFICATION

Output mode ..... Puise 0~15V, 10MA or open collect, 0~30V, 100MA
Counts speed ..... 1 count/1 sec, 100 counts/1 hour, 1000 counts/1 hour
Accutacy ..... ±0.2% RD
Aux. power source ..... AC 100V or 220V 50/60HZ
Power consumption ..... ≤ 3VA
Operating temperature range ..... 0~60°C
Storage temperature range ..... −10~70°C
Temperature effect ..... ≤ 0.2% RD, ± 10°C
Max. relative numidity 95%
Insulation resistance ..... ≥ 100MΩ, DC500V
Dielectric withstand voltage ..... Between output/power/case, AC2KV, 60HZ, / min.

ORDER INFORMATION

JTP − □ □ □

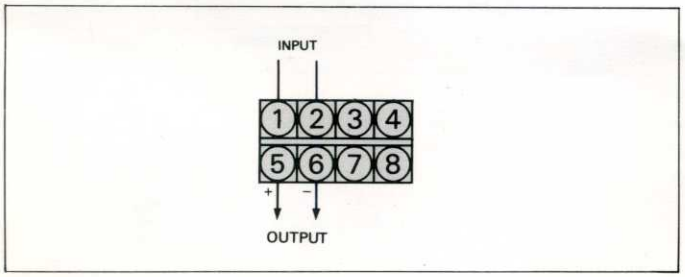
Model

Counts Speed
1:1 count/1 sec
A:100 counts/1 hour
B:1000 counts/1 hour
C: Option

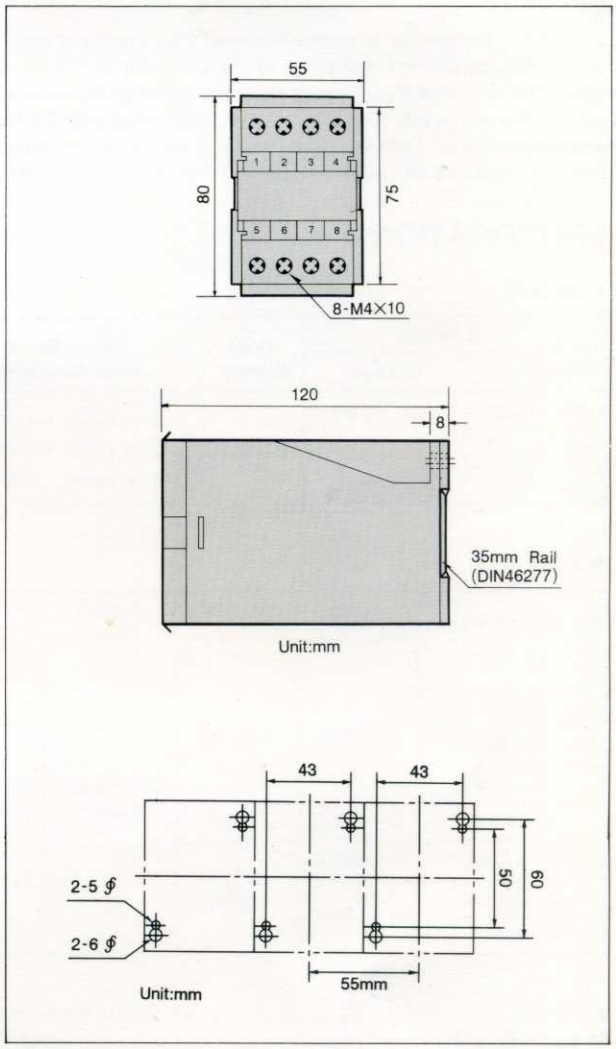
Output Mode
P: Pulse
C: open collect
0: option

Aux. power Source
1: AC 110V
2: AC 220V
3: option

CONNECTION DIAGRAM



OUTSIDE DIMENSIONS



POTENTIOMETER TRANSMITTER

FEATURES

- Converting a potentiometer or slidewire Position input to a DC output.
- Easy to change output range.
- Plug-in omniconnect terminals.
- 3 way isolated.

ORDERING INFORMATION

MODEL: JS4-PT- 1 □□

Input Potentiometer

1 : Total resistance 100Ω～10KΩ

DC Output Range (Output Resistance)

V2 : 0～5V	(≧ 1KΩ)
V3 : 1～5V	(≧ 1KΩ)
V4 : 0～10V	(≧ 1KΩ)
A1 : 0～1mA	(0～10KΩ)
A2 : 0～10mA	(0～1.5KΩ)
A3 : 0～20mA	(0～750Ω)
A4 : 4～20mA	(0～750Ω)
00 : Option	

Power Supply

A : AC 85～265V, DC 100～330V

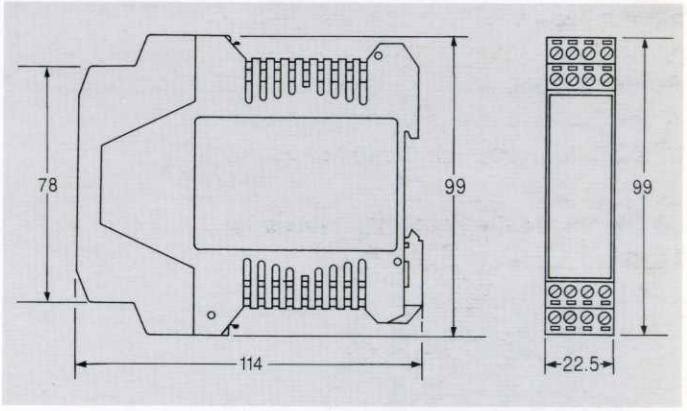
B : DC 20～60V

0 : Option

SPECIFICATION

Accuracy	±0.1% RO.
Response Time	≦400 msec. 0～99%
Output Ripple	≦0.5% RO. (Peak)
Power Supply	AC 85V～265V, 50/60Hz
	DC 100～330V
	DC 20～60V
Power Consumption	at 240V, ≦AC 6VA, ≦DC 5W
	110V, ≦AC 4VA, ≦DC 3W
Temperature Coefficient	≦0.015%/℃
Operating Temperature	0～60℃
Storage Temperature	-10～70℃
Max. Relative Humidity	0～90%
Isolation	Input/Output/Power
Dielectric Strength	AC 1.8KV/min.
Insulation Resistance	≧100MΩ , DC 500V
Impulse Withstand Test	IEC 1000-4-5, class 4
Weight	Abt. 170g

THE OUTSIDE DIMENSION (unit: mm)

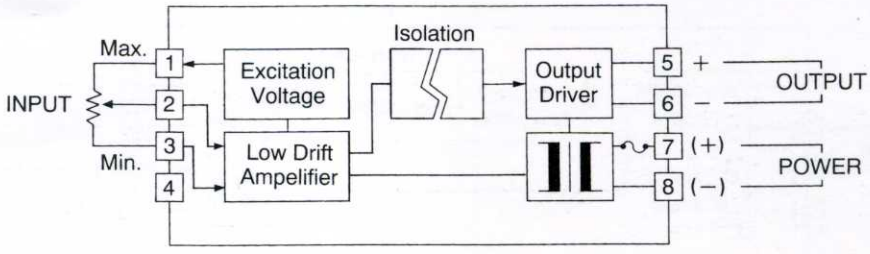


● **Dip SW. for Output Range (Standard)**

Output Range	SW.2 1	2	3	4	5	6	7	8
0～5V	■		■		■		■	
1～5V	■		■	■	■		■	■
0～10V	■		■			■		■
0～10mA		■			■		■	
0～20mA		■				■		■
4～20mA		■		■		■	■	■

■ ON

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



SPEED (FREQUENCY) TRANSMITTER

FEATURES

- Converting the output from a pulse-type transducer into a standard process signal.
- Easy to change output range.
- Plug-in omniconnect terminals.
- 3 way isolated.

ORDERING INFORMATION

MODEL-JS4-RT- □□□□

Input Frequency Range

A : 0～50HZ	F : 0～2KHZ
B : 0～100HZ	G : 0～5KHZ
C : 0～200HZ	H : 0～10KHZ
D : 0～500HZ	0 : Option
E : 0～1KHZ	

Input Amplitude

A : Excitation-DC 12～16V, 5mA
1 : 2～50V (Input Resistance- ≧ 500KΩ)
2 : 15～350V (Input Resistance- ≧ 500KΩ)
0 : Option

DC Output Range (Output Resistance)

V2 : 0～5V	(≧ 1KΩ)
V3 : 1～5V	(≧ 1KΩ)
V4 : 0～10V	(≧ 1KΩ)
A1 : 0～1mA	(0～10KΩ)
A2 : 0～10mA	(0～1.5KΩ)
A3 : 0～20mA	(0～750Ω)
A4 : 4～20mA	(0～750Ω)
00 : Option	

Power Supply

A : AC 85～265V	DC 100～330V
B : DC 20～60V	0 : Option

● **Dip SW. for Output Range (Standard)**

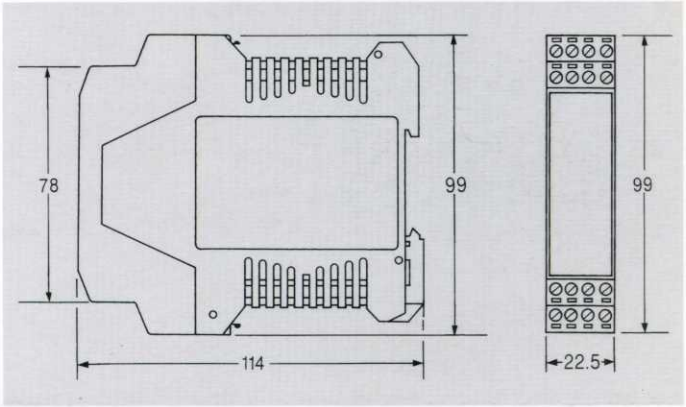
Output Range	SW.2 1	2	3	4	5	6	7	8
0～5V	■		■		■		■	
1～5V	■		■	■	■		■	■
0～10V	■		■			■		■
0～10mA		■			■		■	
0～20mA		■				■		■
4～20mA		■		■		■	■	■

■ ON

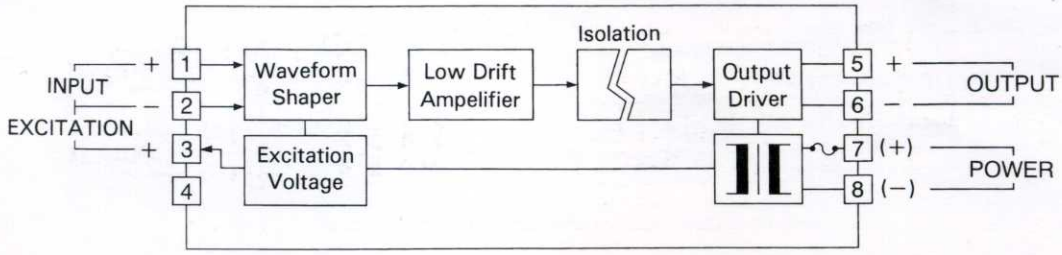
SPECIFICATION

Accuracy ..... ±0.1% RO.
Response Time(0～90%) ..... 0～50Hz ≦ 3 sec.
0～100Hz ≦ 1.5 sec.
0～500Hz ≦ 700ms.
0～10KHz ≦ 500ms.
Output Ripple ..... ≦ 0.5% RO. (Peak)
Power Supply ..... AC 85V～265V, 50/60Hz
DC 100～330V
DC 20～60V
Excitation ..... DC 12～16V, 5mA
Power Consumption ..... at 240V, ≦ AC 6.5VA, ≦ DC 5W
110V, ≦ AC 4VA, ≦ DC 3W
Temperature Coefficient ..... ≦ 0.015%/℃
Operating Temperature ..... 0～60℃
Storage Temperature ..... -10～70℃
Max. Relative Humidity ..... 0～90%
Isolation ..... Input/Output/Power
Dielectric Strength ..... AC 1.8KV/min.
Insulation Resistance ..... ≧ 100MΩ , DC 500V
Impulse Withstand Test ..... IEC 1000-4-5, class 4
Weight ..... Abt. 170g

THE OUTSIDE DIMENSION (unit: mm)



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



FEATURES

- Powing a 4～20mA DC current loop.
- Output voltage: 21～27V.
- Easy to change output range.
- Plug-in omniconnect terminals.
- 3 way isolated.

ORDERING INFORMATION

MODEL: JS4-DW- A4 □□

DC Input Range (Input Resistance)

A4 : 4～20mA (≦50Ω)

DC Output Range (Output Resistance)

V2 : 0～5V (≧1KΩ)
V3 : 1～5V (≧1KΩ)
V4 : 0～10V (≧1KΩ)
A1 : 0～1mA (0～10KΩ)
A2 : 0～10mA (0～1.5KΩ)
A3 : 0～20mA (0～750Ω)
A4 : 4～20mA (0～750Ω)
00 : Option

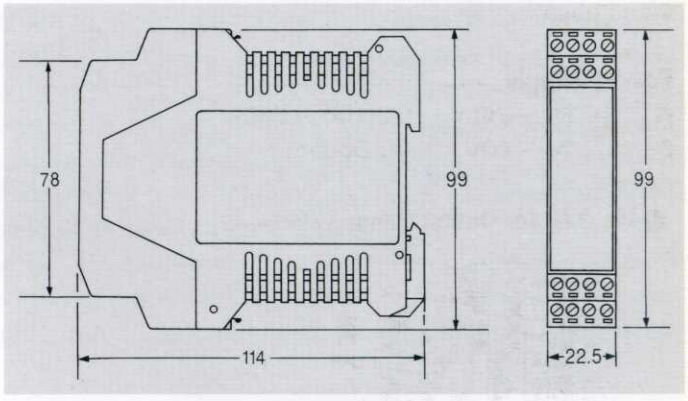
Power Supply

A : AC 85～265V, DC 100～330V
B : DC 20～60V
0 : Option

SPECIFICATION

Accuracy ..... ±0.1% RO.
Response Time ..... ≦400 msec. 0～99%
(Option) ≦50 msec. 0～99%*
Output Ripple ..... ≦0.5% RO. (Peak)
Power Supply ..... AC 85V～265V, 50/60Hz
DC 100～330V
DC 20～60V
Power Consumption ..... at 240V, ≦AC 7.5VA, ≦DC 6W
110V, ≦AC 4VA, ≦DC 4W
Supply Output ..... DC 21V～27V, Max. 30mA
Temperature Coefficient ..... ≦0.015%/℃
Operating Temperature ..... 0～60℃
Storage Temperature ..... -10～70℃
Max. Relative Humidity 90%
Isolation ..... Input/Output/Power
Dielectric Strength ..... AC 1.8KV/min.
Insulation Resistance ..... ≧100MΩ, DC 500V
Impulse Withstand Test ..... IEC 1000-4-5, class 4
Weight ..... Abt. 170g
* High response time, output ripple be according to input ripple.

THE OUTSIDE DIMENSION (unit: mm)

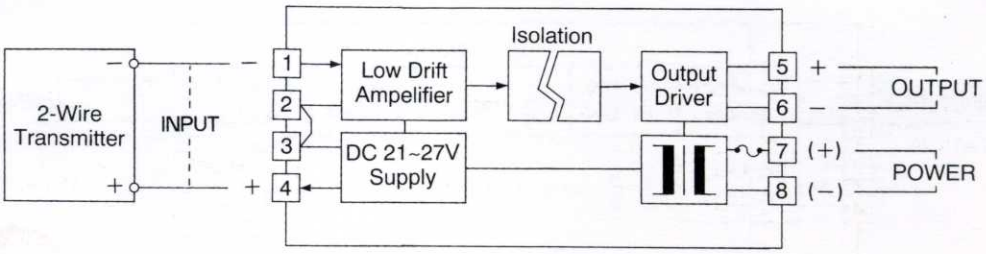


● **Dip SW. for Output Range (Standard)**

Output Range	SW.2 1	2	3	4	5	6	7	8
0～5V	■		■		■		■	
1～5V	■		■	■	■		■	■
0～10V	■		■			■		■
0～10mA		■			■		■	
0～20mA		■				■		■
4～20mA		■		■		■	■	■

■ ON

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



FEATURES

- Two-wire output for DC 4～20mA.
- Easy to wire to terminals.
- Plug-in omniconnect terminals.
- 2 way isolated.

ORDERING INFORMATION

MODEL: JS4-2DT-☐A4

DC Input Range (Input Resistance)

V1 : 0～50mV*	(≧ 200KΩ)
V2 : 0～5V	(≧ 1MΩ)
V3 : 1～5V	(≧ 1MΩ)
V4 : 0～10V	(≧ 1MΩ)
A1 : 0～1mA	(≦ 1KΩ)
A3 : 0～20mA	(≦ 50Ω)
A4 : 4～20mA	(≦ 50Ω)
00 : Option	

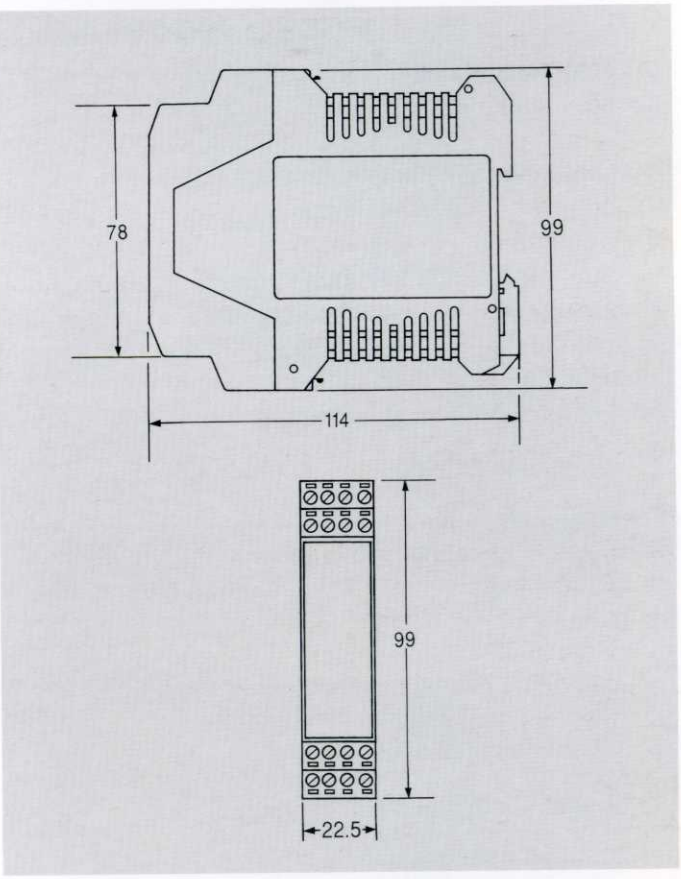
*0～75mV is available

DC Output Range (Output Resistance)

A4 : 4～20mA (600Ω Max. at 24V DC)

Power supply for two wire output: DC 11～32V
Output Resistance = (Supply Voltage - 11V) ÷ 0.02A

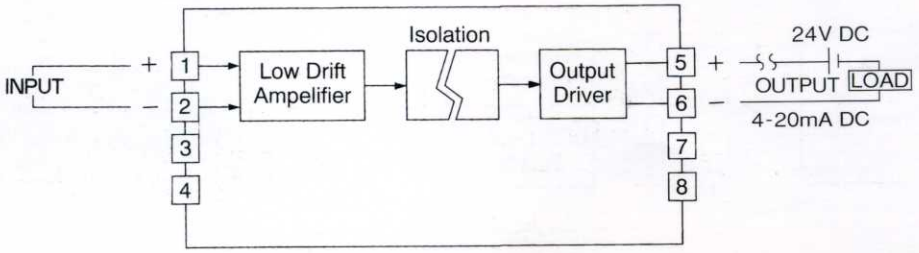
THE OUTSIDE DIMENSION (unit: mm)



SPECIFICATION

Accuracy	±0.1% RO.
Response Time	≦400 msec. 0～99%
Output Ripple	≦0.5% RO. (Peak)
Temperature Coefficient	≦0.015%/℃
Operating Temperature	0～60℃
Storage Temperature	-10～70℃
Max. Relative Humidity	90%
Isolation	Input/Output
Dielectric Strength	AC 1.5KV, Input/Output
	AC 1.8KV All Terminals/Ground
Insulation Resistance	≧100MΩ , DC 500V
Impulse Withstand Test	IEC 1000-4-5, class 4
Weight	Abt. 150g

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



FEATURES

- Converting a DC input into a standard process signal.
- Easy to change input and output range.
- Plug-in omniconnect terminals.
- 3 way isolated.

ORDERING INFORMATION

MODEL: JS4-DT-□□□

DC Input Range (Input Resistance)

V1 : 0～50mV*	(≧ 200KΩ)
V2 : 0～5V	(≧ 1MΩ)
V3 : 1～5V	(≧ 1MΩ)
V4 : 0～10V	(≧ 1MΩ)
A1 : 0～1mA	(≦ 1KΩ)
A3 : 0～20mA	(≦ 50Ω)
A4 : 4～20mA	(≦ 50Ω)
00 : Option	

* 0～75mV is available

DC Output Range (Output Resistance)

V2 : 0～5V	(≧ 1KΩ)
V3 : 1～5V	(≧ 1KΩ)
V4 : 0～10V	(≧ 1KΩ)
A1 : 0～1mA	(0～10KΩ)
A2 : 0～10mA	(0～1.5KΩ)
A3 : 0～20mA	(0～750Ω)
A4 : 4～20mA	(0～750Ω)
00 : Option	

Power Supply

A : AC 85～265V, DC 100～330V
B : DC 20～60V 0 : Opion

● **Dip SW. for Input & Output Range (Standard)**

Input Range	SW.1 1	2	3	4	5	6	7	8
0～50mV	■						■	■
0～5V		■				■		
1～5V		■				■	■	
0～10V			■			■		
0～1mA	■				■	■		
0～20mA	■			■		■		
4～20mA	■			■		■	■	

Output Range	SW.2 1	2	3	4	5	6	7	8
0～5V	■		■		■		■	
1～5V	■		■	■	■		■	■
0～10V	■		■			■		■
0～10mA		■			■		■	
0～20mA		■				■		■
4～20mA		■		■		■	■	■

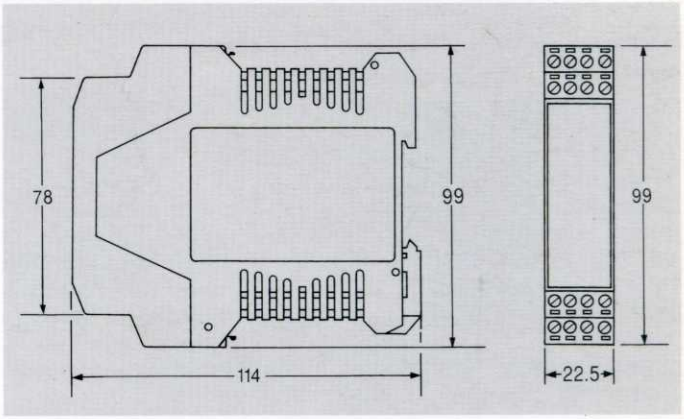
■ ON

SPECIFICATION

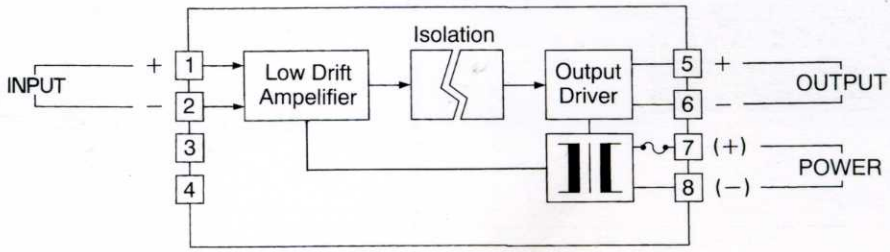
Accuracy ..... ±0.1% RO.
Response Time ..... ≦400 msec. 0～99%
(Option) ≦50 msec. 0～99%*
Output Ripple ..... ≦0.5% RO. (Peak)
Power Supply ..... AC 85V～265V, 50/60Hz
DC 100～330V
DC 20～60V
Power Consumption ..... at 240V, ≦AC 6VA, ≦DC 5W
110V, ≦AC 4VA, ≦DC 3W
Temperature Coefficient ..... ≦0.015%/℃
Operating Temperature ..... 0～60℃
Storage Temperature ..... -10～70℃
Max. Relative Humidity 90%
Isolation ..... Input/Output/Power
Dielectric Strength ..... AC 1.8KV/min.
Insulation Resistance ..... ≧ 100MΩ , DC 500V
Impulse Withstand Test ..... IEC 1000-4-5, class 4
Weight ..... Abt. 170g

* High response time, output ripple be according to input ripple.

THE OUTSIDE DIMENSION (unit: mm)

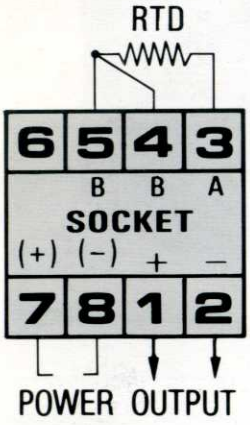


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

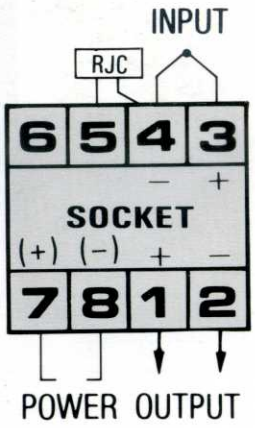


CONNECTION DIAGRAM

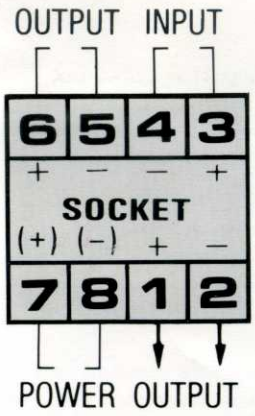
Model MSOT
for RTD PT100



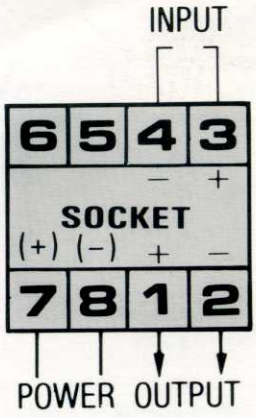
Model MSOT
for T/C



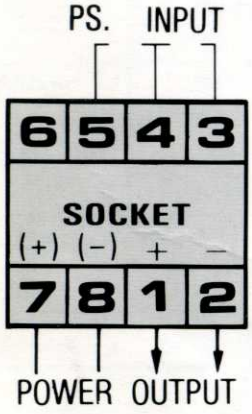
Model RIS
for DC/DC 2 Sets O/P



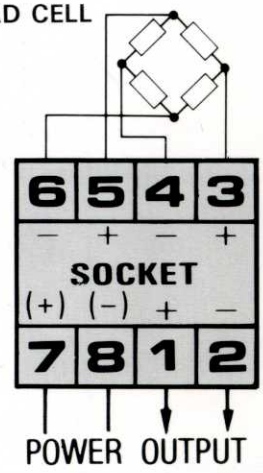
Model RIS
for DC/DC 1 Set O/P



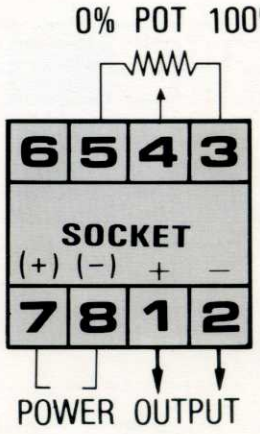
Model RPMS
for RPM



Model LTT
for LOAD CELL

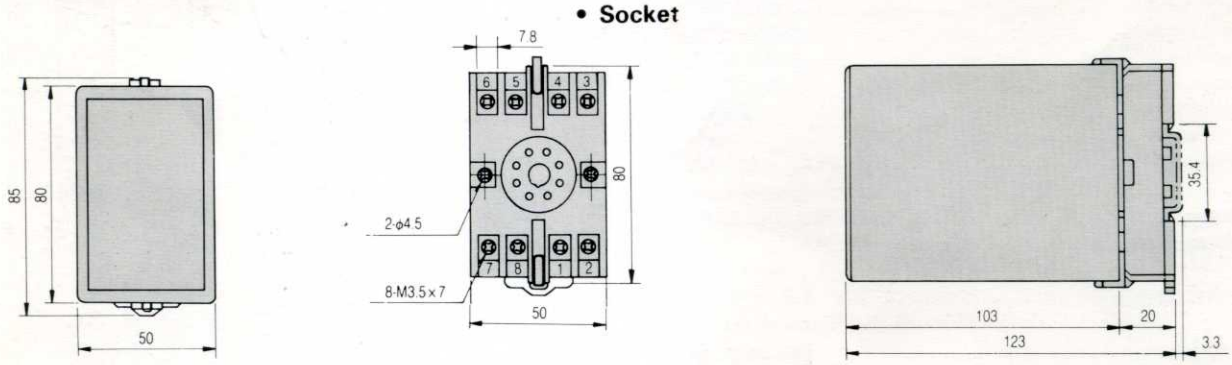


Model KTT
for POT



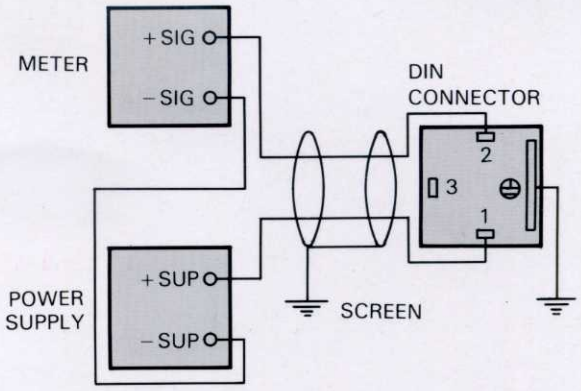
OUTSIDE DIMENSION

• Socket

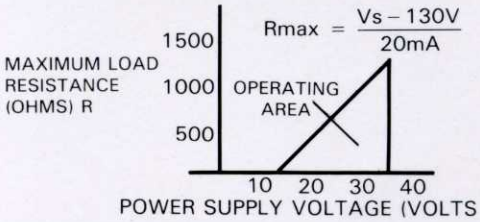


TRANSDUCER WIRING DIAGRAM

- LATEST STRAIN GAUGE TECHNOLOGY
- ALL STAINLESS STEEL CONSTRUCTION
- LOW COST
- OUTPUT OPTIONS 20mV, 5V, 10Vdc, 4-20mA
- EXCELLENT STABILITY/ACCURACY
- RANGES FROM 500mbar to 700bar
- O.E.M. APPLICATIONS
- COMPATIBLE INDICATORS and ALARMS



LOAD DRIVING CHART for GS 4003/GS4103



SPECIFICATION

GS 4001/GS4101 - 0-5V output

INPUT

Pressure ranges ..... 0-500mbar to 0-700bar
Pressure reference ..... Gauge
Over pressure ..... 2 × Rated pressure

OUTPUT

Span 0-5Vdc
Type ..... 4 wire/3 wire
Common mode voltage ..... 1Vdc ± 1%

ACCURACY

Zero offset ..... < ± 1% FSO
Combined non-linearity/hysteresis ..... < ± 0.3% FSO
Repeatability ..... < ± 0.1% FSO
Long term stability ..... < ± 0.2% FSO/6 months

ELECTRICAL

Supply voltage 13-30Vdc
Supply voltage effects 11μV/V
Reverse polarity ..... Protected
Power requirements 30mA
Load driving capability ..... 2.5KΩ (min)
Output short circuit (to ground) ..... No damage
Insulation resistance ..... 100MΩ@ 100Vdc elec conn to case
Response time (63%) 1mS

ENVIRONMENTAL

Pressure media ..... Media compatible with 17/4PH + 304 Stainless Steel/Alumina
Operating temperature range ..... – 20 to + 80°C
Storage temperature range ..... – 40 to + 90°C
Thermal effect Zero ..... < ± 0.03% FSO/°C
Thermal sensitivity ..... < ± 0.03% FSO/°C
Vibration tolerance ..... 10g's to 50Hz
Mechanical shock tolerance ..... 15g@s(11mS)
Operating humidity ..... 95% RH

PHYSICAL

Pressure connection ..... ¼" BSP male (others on request)
Electrical connection ..... Mini-DIN plug + socket to DIN43650
Enclosure rating IP65
Natural frequency ..... 20Khz 17/4PH/12Khz Alumina
Weight ..... 80 grams
Materials ..... 300 series stain'stl body/connector 17/4PH stain' stl/ceramic diaphragm

GS 4003/GS 4103-4-20mA output

INPUT

Pressure ranges ..... 0-500mbar to 0-700bar
Pressure reference ..... Gauge
Over pressure ..... 2x Rated pressure

OUTPUT

Span ..... 4-20 mA
Type ..... 2 wire

ACCURACY

Zero offset ..... < ± 1% FSO
Combined non-linearity/hysteresis ..... < ± 0.3% FSO
Repeatability ..... < ± 0.1% FSO
Long term stability ..... < ± 0.2% FSO/6 months

ELECTRICAL

Supply voltage 13-36Vdc
Supply voltage effects 3μA/V
Reverse polarity ..... Protected
Load driving capability ..... 1150Ω @ 36Vdc
Output short circuit (to ground) ..... No damage
Insulation resistance ..... 100MΩ @ 100Vdc elec conn to case
Response time (63%) 1.5mS

ENVIRONMENTAL

Pressure media ..... Media compatible with 17/4PH + 304 Stainless Steel/Alumina
Operating temperature range ..... – 20 to + 80 °C
Storage temperature range ..... – 40 to + 90 °C
Thermal effect Zero ..... < ± 0.03% FSO/°C
Thermal sensitivity ..... < ± 0.03% FSO/°C
Vibration tolerance ..... 10g's to 50Hz
Mechanical shock tolerance ..... 15g@s (11mS)
Operating humidity ..... 95% RH

PHYSICAL

Pressure connection ..... ¼ BSP male (others on request)
Electrical connection ..... Mini-DIN plug + socket to DIN43650
Enclosure rating IP65
Natural frequency ..... 20Khz 17/4PH/12Khz Alumina
Weight 85grams
Materials ..... 300 series stain'stl body/connector 17/4PH stain' stl/ceramic diaphragm