Dual Output Plug-in Signal Conditioners W-UNIT

FREQUENCY TRANSMITTER

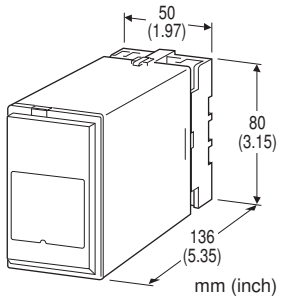
(field-programmable; built-in excitation)

Functions & Features

• Converting the output from a pulse-type transducer into two standard process signals
• Microprocessor based
• Parameters are field-programmable via hand-held programmer PU-2x
• Averaging non-uniform pulses
• Excitation
• High-density mounting

Typical Applications

•Positive displacement flowmeters, turbine flowmeters and vortex flowmeters
•Measuring rotation speed of a machine generating dry contact signals



MODEL: WJPAD[1][2][3][4]–[5]

ORDERING INFORMATION

• Code number: WJPAD-[1][2][3][4]-[5]
Specify a code from below for each [1] through [5].
(e.g. WJPAD-H7A6-K)
•Special output ranges (For codes Z & 0)
Use Ordering Information Sheet (No. ESU-2274). Default setting specified below will be used if not otherwise specified. When the user requires a current and a voltage output, specify the current to be the Output 1 which allows a greater load.
Default settings:
Input zero frequency: 0 Hz
Input span frequency: 1000 Hz
Sampling time (cycle): 200 msec.
Cutout time (cycle): 1000 msec.
Alarm setpoint: 100 %
Alarm hysteresis: 1.00 %
Alarm mode: High alarm

[1] INPUT

A: Dry contact
B: Voltage pulse (Specify sensitivity)
C: 5 V pulse (sensitivity 2 V)
D: 12 V/24 V pulse (sensitivity 5 V)
H: Two-wire current pulse

[2] EXCITATION

1: 5 V DC @ 120 mA
4: 12 V DC @ 60 mA
7: 24 V DC @ 25 mA

[3] OUTPUT 1

Current

A: 4 – 20 mA DC (Load resistance 600 Ω max.)
B: 2 – 10 mA DC (Load resistance 1200 Ω max.)
C: 1 – 5 mA DC (Load resistance 2400 Ω max.)
D: 0 – 20 mA DC (Load resistance 600 Ω max.)
E: 0 – 16 mA DC (Load resistance 750 Ω max.)
F: 0 – 10 mA DC (Load resistance 1200 Ω max.)
G: 0 – 1 mA DC (Load resistance 12 kΩ max.)
Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

1: 0 – 10 mV DC (Load resistance 10 kΩ min.)
2: 0 – 100 mV DC (Load resistance 100 kΩ min.)
3: 0 – 1 V DC (Load resistance 1000 Ω min.)
4: 0 – 10 V DC (Load resistance 10 kΩ min.)
5: 0 – 5 V DC (Load resistance 5000 Ω min.)
6: 1 – 5 V DC (Load resistance 5000 Ω min.)
4W: -10 – +10 V DC (Load resistance 10 kΩ min.)
5W: -5 – +5 V DC (Load resistance 5000 Ω min.)
0: Specify voltage (See OUTPUT SPECIFICATIONS)

[4] OUTPUT 2

Current

A: 4 – 20 mA DC (Load resistance 350 Ω max.)
B: 2 – 10 mA DC (Load resistance 700 Ω max.)
C: 1 – 5 mA DC (Load resistance 1400 Ω max.)
D: 0 – 20 mA DC (Load resistance 350 Ω max.)
E: 0 – 16 mA DC(Load resistance 430 Ω max.)
F: 0 – 10 mA DC (Load resistance 700 Ω max.)
G: 0 – 1 mA DC (Load resistance 7000 Ω max.)
Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

Same range availability as Output 1

[5] POWER INPUT

AC Power

K: 85 – 132 V AC

DC Power

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S: 12 V DC
R: 24 V DC
V: 48 V DC
P: 110 V DC

RELATED PRODUCTS

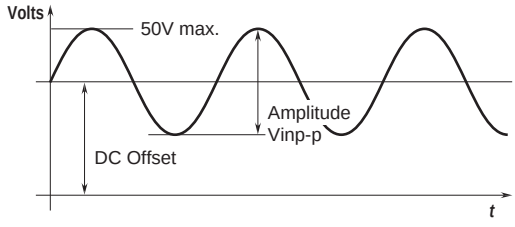
• JX configurator connection kit (model: JXCON)
• Programming Unit (model: PU-2x)

GENERAL SPECIFICATIONS

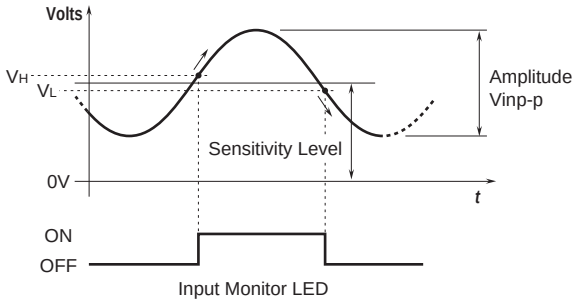
Construction: Plug-in
Connection: M3.5 screw terminals
Housing material: Flame-resistant resin (black)
Isolation: Input or alarm output to output 1 to output 2 to power
Overrange output: Approx. -10 to +115 % at 1 – 5 V
Zero adjustment: -5 to +5 % (front)
Span adjustment: 95 to 105 % (front)
Alarm mode: High or Low
Alarm setpoint: 0 – 100 %
Alarm deadband: 0 – 20 %
Input monitor LED
PL1: Red LED blinks according to the input.
PL2: Red LED stays ON (unused).
Status indicator: Red LED blinks in approx. 1.5 Hz when there are pulse inputs.
Excitation adjustment: 5 – 24 V DC
Adjustments: Programming Unit (model: PU-2x);
(Refer to the users manual of JXCON for the adjustments configurable with JXCON.)
•Input range
•Zero and span
•Low-end cutout
•Sampling time
•Alarm setpoint
•Output fine adjustment
•Others
Configuration: DIP switch
•Input type
•Pulse Sensing
•Noise Filter
•Others
(Refer to the instruction manual for details)
Modular jack: Connecting the PU-2x
Sampling time: 50 msec. – 100 sec.
Input pulse sensing: DC coupled
Sensitivity adjustments: V_H pot. for Hi level; V_L pot. for Lo level
Cutout: 100 msec. – 300 sec.; Set an inverse value of the frequency to be cut out.

INPUT SPECIFICATIONS

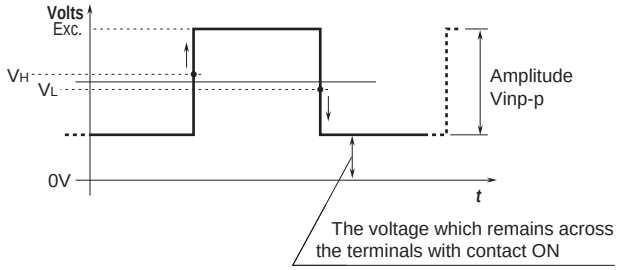
Excitation: Shortcircuit protection; approx. 440 mA at shortcircuit
Pulse width time requirement: ≥ 5 μ sec.
■ **Dry Contact**
Max. frequency: 100 kHz
Input requirements
•**Excitation code**: 1
Sensing: 5 V / 0.5 mA
OFF level: ≥ 8.2 kΩ / 2.3 V
ON level: ≤ 5.3 kΩ / 1.7 V
•**Excitation code**: 4
Sensing: 12 V / 1.2 mA
OFF level: ≥ 2.3 kΩ / 2.3 V
ON level: ≤ 1.7 kΩ / 1.7 V
•**Excitation code**: 7
Sensing: 24 V / 2.4 mA
OFF level: ≥ 1 kΩ / 2.3 V
ON level: ≤ 0.8 kΩ / 1.7 V
■ **Voltage Pulse**: Specify DC offset and amplitude.
Max. frequency: 100 kHz
Waveform: Square or sine
Input impedance: 10 kΩ minimum
Input amplitude: 0.5 – 50 Vp-p
Max. voltage between input terminals: 50 V
■ **5 V, 12 V, 24 V Pulse**
Max. frequency: 100 kHz
Waveform: Square
Input impedance: 10 kΩ minimum
Input amplitude: 3 – 25 Vp-p
Max. voltage between input terminals: 50 V
Detecting level: (Hysteresis: V_H – V_L ≥ 500 mV standard)
5 V pulse: V_H 2.25 V; V_L 1.75 V
12 V / 24 V pulse: V_H 5.25 V; V_L 4.75 V
■ **Two-wire Current Pulse**
Max. frequency: 100 kHz
Input resistance: receiving resistor 100 Ω
Input range: 0 – 25 mA
Hi/Lo level: ≤ 9.5 mA for Lo, ≥ 14.5 mA for Hi
■**Voltage pulse waveform**



■**Voltage pulse (example)**



■**Dry contact (example)**



OUTPUT SPECIFICATIONS

■ **DC Current**: 0 – 20 mA DC
Minimum span: 1 mA
Offset: Max. 1.5 times span
Load resistance: Output drive 12 V max. for Output 1; 7 V max. for Output 2
■ **DC Voltage**: -10 – +12 V DC
Minimum span: 5 mV
Offset: Max. 1.5 times span
Load resistance: Output drive 1 mA max.; at ≥ 0.5 V
■ **Alarm Output**: Open collector; 30 V DC @ 30 mA
Saturation voltage: ≤ 0.2 V DC @ 5 mA

INSTALLATION

Power input
•**AC**: Operational voltage range 85 – 132 V, 47 – 66 Hz, approx. 3.9 VA
•**DC**: Operational voltage range: Rating ±10 %, or 85 – 150 V for 110 V rating; ripple 10 %p-p max.; Approx. 3.3 W (140 mA at 24 V)
Operating temperature: -5 to +60°C (23 to 140°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: Surface or DIN rail
Weight: 350 g (0.77 lbs)

PERFORMANCE in percentage of span

Accuracy: ±0.1 % (or ±0.2 % at 10 kHz – 100 kHz)
Alarm setpoint accuracy: ±0.1 % (or ±0.2 % at 10 kHz – 100 kHz)
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
Response time: ≤ 0.5 sec. (0 – 90 %) with sampling time 100 msec.
Line voltage effect: ±0.1 % over voltage range
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @1 minute
(input or alarm output to output to power to ground)
1000 V AC @ 1 minute (output 1 to output 2)

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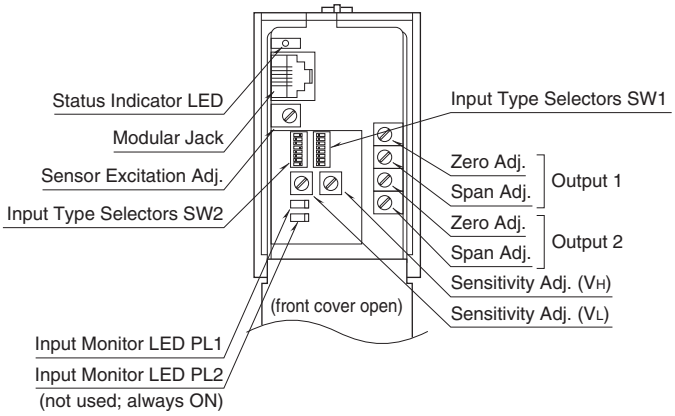
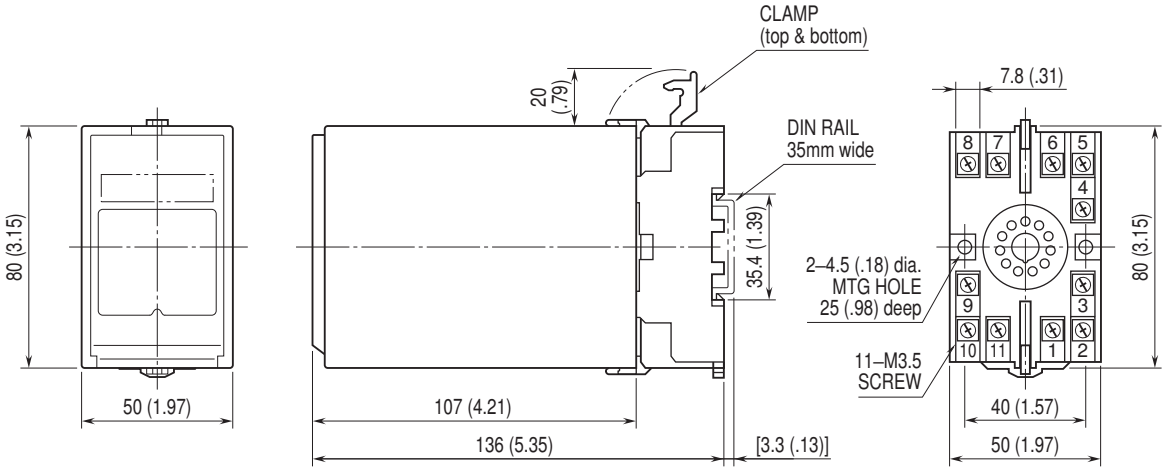
EXTERNAL VIEW

This unit is factory calibrated according to the Ordering Information. If you need to change hardware & software setting, refer to the instruction manuals of the transmitter and Programming Unit.

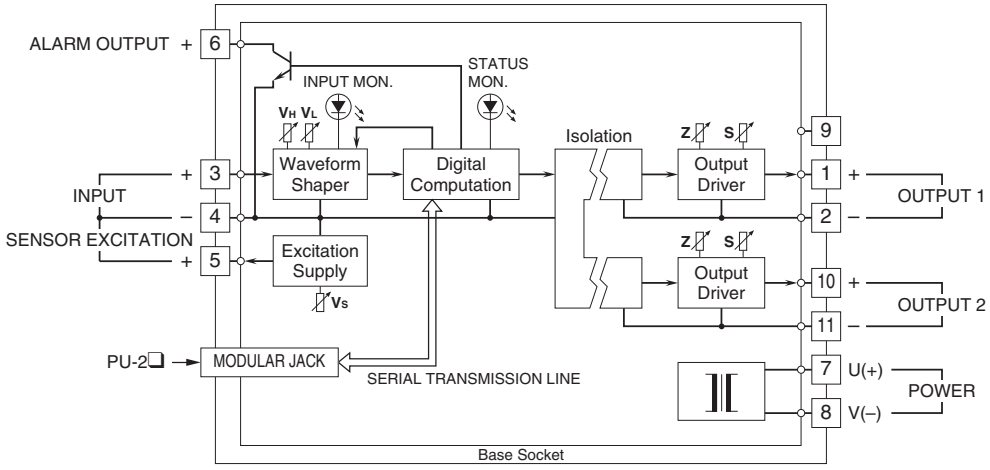


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



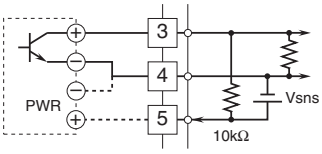
• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

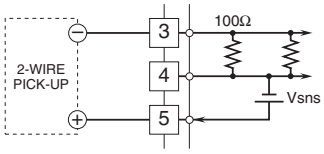


Input Connection Examples

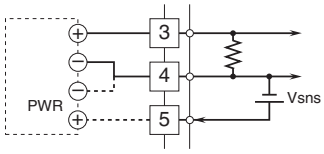
■Dry Contact



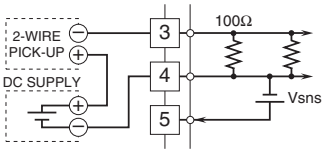
■2-Wire Current Pulse
•Built-in Excitation



■Voltage Pulse



•External DC Supply



⚠ Specifications are subject to change without notice.

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