Watt-Watt/Hour, Var–Var/Hour Transducer—— WWH-3D / VVH-3D

- *ACCURACY OF 0.1%*
- *THREE-PHASE THREE-WIRE*
- *ALPHA NUMERIC LCD DISPLAY*
- *DRY CONTACT or OPTO-ISOLATOR OUTPUT*
- *COMPLETE ISOLATION*
- *3 - YEAR WARRANTY*

The WWH-3d and VVH-3d combine bi-directional power and energy transducers in a single compact housing.

The WWH-3d incorporates a watt transducer providing a linear process current output with watt/hour measurement with two pulse outputs, for the direct and the reflective energy, of either dry-contact Reed relays or opto-isolators, the VVH-3d provides the same for the reactive power.

The unit displays the instantaneous power and two accumulative energy (direct and reflective). A small arrow → indicates the power direction.

Displayed units, power range, pulse-weight and pulse-per-hour rates as well as reset button enabling and internal registers pre-setting can be programmed or altered by the user.

The transducers provide instantaneous Watt/Var current loop output extracted from the voltage and current inputs, and Watt-hour or Var-hour pulse outputs for energy accumulation.

The WWH-3d and the VVH-3d can be calibrated to wide input ranges and to a large scale of pulse rates, reflecting the required energy resolutions.

Advanced circuitry designs make the WWH-3d and the VVH-3d top grade instruments, offering true 0.1% of span accuracy in power and energy outputs.

The transducers families are available as single-phase or 3-phase units. They can be ordered with a dry contact Reed relays output, having a maximum rate of 3000 pulse/hour, or with an optically isolated open-collector NPN transistor, obtaining a maximum rate of 95,000 pulse per hour.

This high energy resolution makes them perfect measuring device for a bakery dough mixing control or monitor system.

Integral back illuminated dot matrix LCD provides readings of bi-directional Watt/Var and accumulated Watt-Hour/Var-Hour registers.

A non-volatile RAM keeps the energy registers when power is off.

A micro-switch located behind a tiny hall in the top left corner of the unit is used for resetting the energy accumulators.

The WWH-3d and the VVH-3d transducers are housed in a polycarbonate plastic enclosure, mounted on a standard DIN rail.

INPUTS

CONNECTION: 3 phase, 3 wire, unrestricted

POWER FACTOR: Unity - to lead or lag zero

CALIBRATION SPAN: 0-170 to 0-4330 Watt/Var

OVER RANGE: +42% (at full accuracy)

CURRENT

CURRENT SPANS: 0-1 to 0-5 Aac RMS
(up to 0-10 Aac - optional)

CURRENT OVER RANGE: +20% (at full accuracy)

PEAK OVERLOAD: 40 Aac RMS, for 5 sec. every 10 minutes
Option: 50 Aac RMS, for 30 sec, every 10 minutes

VOLTAGE

VOLTAGE SPANS: 0-85 to 0-500 Vac

VOLTAGE OVER-RANGE: +20% (at full accuracy)

VOLTAGE OVERLOAD (maximum 600 Vac):

for spans up to 200 Vac: Withstand 2x[nom. rating] continuous
for spans up to 350 Vac: Withstand 1.6x[nom. rating] continuous
for spans up to 500 Vac: Withstand 1.4x(nominal rating) continuous

POWER SUPPLY

SUPPLY RANGES: 115, 230 Vac -15/+25% and Self-powered
Option: 380 Vac -15/+20%

POWER OVERLOAD: Withstand 1.45x[nom. rating]
continuous

INPUT BURDEN

CURRENT: 0.26 VA @ 5 Aac

VOLTAGE: 0.15 VA @ 150 Vac, 0.3 VA @ 300 Vac

SUPPLY: 2.4 - 2.6 VA @ 150/300 Vac at 20 mA output

ISOLATION: 2.5 KV RMS/1 minute (current inputs)
4KV RMS/1 minute (voltage and power inputs)

OUTPUTS

WATT/VAR

OUTPUT SPANS: 0..1 to 0/4..20 mA
(any special span - available)

MAXIMUM OUTPUT LOAD: Rld (KΩ) = 16/Iout (mA)

OUTPUT RESISTANCE: Z (KΩ) = 0.1 * Vo (Vdc)

LOAD VARIATION EFFECT: < ±0.03% (for full change)

RESPONSE TIME: < 200 msec (10-90% of span)

WATT/VAR-HOUR

DRY CONTACT: Reed relay SPST

Contact rating: 10 Watt maximum.
Maximum voltage: < 200V
Maximum current:< 0.5A
Maximum pulse rate: 3600 pulses per hour

OPTO ISOLATOR: NPN open collector

Isolation: 2500Vdc or peak AC
Maximum Load: < 1KΩ
Maximum External Supply: < 24Vdc
Maximum pulse rate: 96,000 pulses per hour

DISPLAY

DISPLAY TYPE: 2x16 characters, back-illuminated LCD

DISPLAYED DATA:
Model : 5 characters
Power : 6 digits, Units - 2 char., Direction - 1 char.
Energy (Forward & Reverse) : 2 x 6 digits+2 x Direction

DISPLAYED SYMBOLS (jumper selection):
Forward Energy: "F" or right-pointing arrow
Reverse Energy: "R" or left-pointing arrow
Units: W or V, KW or KV, MW or MV

DISPLAY UPDATE RATE: 1 update per second

DIGITAL CONTROL

COMMUNICATION PORT: RS-232c
Baud Rate: 4800 bps
Word Length: 7 bits
Stop Bits: 2
Parity: Even

PROGRAMMABLE PARAMETERS:
Displayed Units: Watt, KW, MW
Calibration: Max. Power, Pulse/Hour,
Control: Energy register preset.
Reset button Enable/Disable

RESET: micro-switch (pressed by a toothpick for 5 seconds) operated after software activation
See "Panel special functions" figure

DIGITAL DATA OUTPUT:
As default: Power Register
Forward Energy Register
Reverse Energy Register

GENERAL SPECIFICATIONS

ACCURACY: <±0.1% of span typical
(<±0.25% of span maximum)
for Watt/Var in 5 - 140% range

FREQUENCY RANGE: 45 - 440 Hz

FREQUENCY VARIATION EFFECT:
<± 0.02%/Hz @ Watt output
<± 0.1%/Hz @ Var output

TEMPERATURE
Operating: -5 To +65°C
Storage: -35 To +85°C

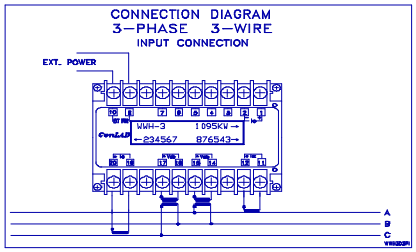
TEMPERATURE STABILITY: Better than ±0.01%/1°C

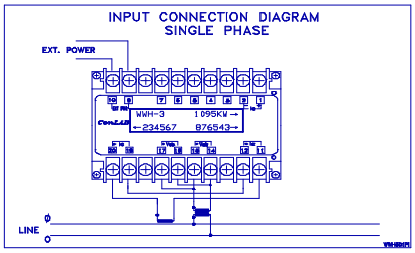
HUMIDITY: 5 - 95% relative, non condensed

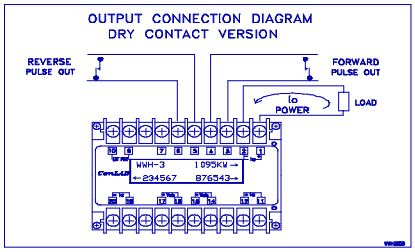
HOUSING: Plastic Polycarbonate

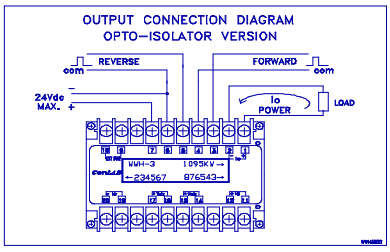
PROTECTION LEVEL:
Box: According to IP-40
Terminals: According to IP-20

WEIGHT: 0.6 Kg

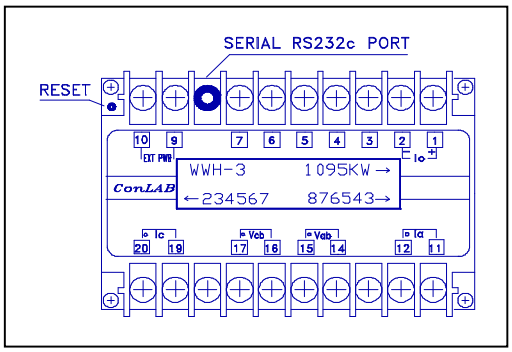




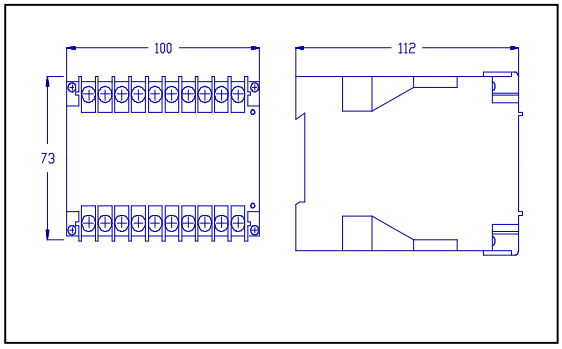




Panel Special Functions



Dimensions



Note: To reset the energy registers, press the reset switch using a toothpick and hold it for six seconds.

Ordering Information

WWH-3D	-3P	-S	-F1	-V1	-I4	-P5	-Q1	-100
WWH-3D	1PHASE - 1P	S: Self-Powered	F1: 50Hz	V1: 115 Vac	I1: 0...1Aac	P1: 0...1mA	Q1: Dry	No. Pulses/Hour
VVH-3D	3PHASE - 3P	A: 115 Vac	F2: 60Hz	V2: 230 Vac	I2: 0...2Aac	P2: 0...5mA	Q2: opto-Isolator	
		B: 230 Vac	F3: 400Hz	V3: 380 Vac	I3: 0...5Aac	P3: 0...20mA		
						P4: 4...20mA		
						P5: 0...12...20mA		