



An Exceltec International Company

linecard



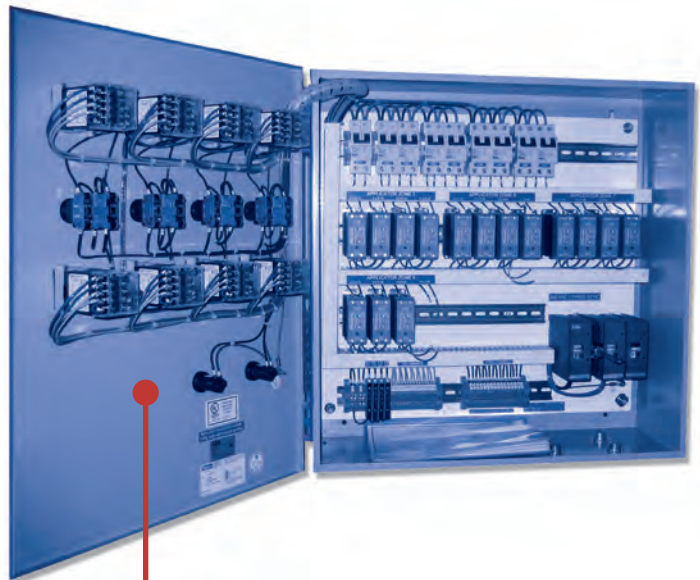
Instrumentors Supply is the Northwest's premier supplier of heating, measurement, and process control devices used in industrial manufacturing. With service throughout the Pacific Northwest, Idaho, and Utah, we are dedicated to offering our customers unparalleled technical assistance and customer support.

To speak directly to our knowledgeable sales staff, call us today at:

1-800-468-4969

or visit us on the internet for more information, including how to apply for an account and request a quote online

www.instrumentors.com



Whether it's designing a custom process control system like this one, or recommending a simple band heater, ISI is the one-stop source for all your heat, sensor, and process control needs.

1-800-468-4969 toll free
www.instrumentors.com

products

B

Band Heaters



Band/Nozzle Heaters

C

Contactors
Counters
Cable Heaters
Capacitance Sensors
Cartridge Heaters
Ceramic Heaters
Circulation Heaters
Conductivity Meters
Control Panels
Current Indicators



Cartridge Heaters

D

Data Loggers/Data Acquisition

E

Electric Process Heaters
Encoders

F

Fiber Optic Sensors
Flexible Silicon Heaters
Flow Sensors
Flow Switches/Meters

G

Gas detectors and gas analyzers
Gauges

H

Heat Trace
Hot Air Systems
High Temp Wire
Humidity Sensors & Controls



Power Supplies

I

Immersion Heaters
Inductive Proximity Sensors
Infrared Heaters/Sensors

L

Level Sensors/Controls
Level Transmitters/Transducers
Limit Switches
Liquid Level Sensors
Load Cells
LVDT's

M

Measurement Sensors
Mechanical Contactors
Mechanical Counters
Mercury Relays
Motor Contactors & Starters

P

Panel Meters
PH Meters, Sensors, Controls
Photo Proximity
PLC's
Position Controllers
Position Transducers
Power Supplies
Pressure Gauges
Pressure Sensors
Pressure Transmitters/Transducers
Process Over-the-side Heaters



Temperature Controls

Q

Quartz Heaters

R

Radiant Heaters
Removable Insulation Covers
Relays
RTD's

S

Safety Equipment
SCR's
Signal Conditioners
Solid State Power Controls
Speed Controllers
Stack Lights
Strip Heaters
Strobe Lights
Switches

T

Tachometers
Temperature Controls/Switches
Temperature Gauges
Temperature Sensors
Temperature Transmitters/Transducers
Timers
Thermocouples
Thermocouple Wire
Thermometers
Thermowells
Transducers
Transmitters
Tubular Heaters



Timer/Counters

U

Ultrasonic Sensors

V

Valves
Variable Frequency Drives

W

Weight Transducers

manufacturers

Whether it's designing

a custom process control system, or recommending a simple band heater, ISI is the one-stop source for all your heat, sensor, and process control needs.

ISI has established strong relationships with all of the manufacturers listed here. Our customers particularly benefit from our preferred vendor status with companies like Watlow and Omron.



3-D/Wika Instruments

gauges

ACR Systems Inc.

data loggers

EE Controls

switches, stack lights, relays

Alloy Engineering

thermowells

ATC/Tenor

timers, proximity switches, counters

Automation Components, Inc. (ACI)

humidity sensors

Avatar Instruments

SCR power controls, OEM controls

Babbitt International

level sensors and controls

Bucan Electric

custom band, cartridge, strip, and silicone rubber heaters

BriskHeat

heat trace

CCI Thermal Technologies

electric process heaters

C R Magnetics

current indicators

Carlo Gavazzi

sensors, relays, controls, counters, contactors, switches, safety equipment, transmitters

Cerus Industrial

contactors, overloads, motor starters, circuit breakers, enclosures, variable frequency drives

Continental Industries

solid state relays

Dalton Electric

split core cartridge heaters

Danaher Controls

speed and motion controls

Danfoss

contactors, controls, valves

Delevan

level measurement systems

Draeger

personal protection systems, fixed/portable gas detection, gas tight suits, air filtration

Dwyer Instruments

equipment for: pressure, flow, air velocity, temperature. valves, test equipment

Dynapar

timers, counters, control systems

Eagle Signal

timers, counters

Electro Numerics

panel meters

EuroTherm

temperature/process controls, indicators, SCR power controls, data recorders, data acquisition

Eustis

thermocouples, RTD's

Fast Heat

process heaters

Fluke

hand held test equipment

Future Designs

chart recorders, digital data loggers

GP:50 Melt Pressure

melt pressure transducers, transmitters, melt temperature sensors, and instrumentation

Gems Sensors and Controls

liquid level, flow, and pressure sensors

Glo-Quartz

process heaters

Go-Switch

proximity switches

Hanna Instruments

PH, conductivity, hygrometers

HB Controls

DIN rail SCRs, customer assemblies

Harwil Corp.

fluid flow and liquid level switches

Indeeco

process heaters

Inor

signal conditioners, transmitters

Kanthal Corporation

heater resistance wire

Logtag

temperature and humidity loggers

Love

temperature controls

Marlin Manufacturing

thermocouples and connectors

Marsh Bellofram

timers, counters, pressure and temperature gauges

Miller Edge

safety mats and door edge guards

Oceasoft

wireless data acquisition systems

Omron

PLC's, timers, counters, light curtains, proximity switches, photo proximity switches

Osram Sylvania

air heaters, radiant heaters

Precision Digital

panel meters

Process Technology

process over-the-side heaters and controls

Raytek

infrared temperature sensing

Reotemp

thermometers

Schmersal

contactors, motor starters, safety switches

Shimpo

hand-held tachometers and strobe lights

Tempco Electric Heater Corp.

electric process heaters

Vaisala

dew point, barometric, carbon dioxide, humidity sensors

Watlow Electric

process heaters, temperature controls, thermocouples, RTD's, multi-cell heaters, silicon rubber heaters

Weiss Instruments

gauges, thermometers

handy reference tools

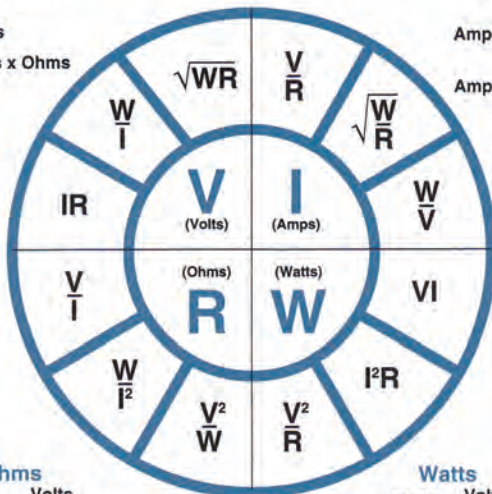
ohms law

Volts

$$\sqrt{\text{Watts} \times \text{Ohms}}$$

$$\frac{\text{Watts}}{\text{Amperes}}$$

$$\text{Amperes} \times \text{Ohms}$$



Amperes

$$\frac{\text{Volts}}{\text{Ohms}}$$

$$\frac{\text{Watts}}{\text{Volts}}$$

$$\sqrt{\frac{\text{Watts}}{\text{Ohms}}}$$

Ohms

$$\frac{\text{Volts}}{\text{Amperes}}$$

$$\frac{\text{Volts}^2}{\text{Watts}}$$

$$\frac{\text{Watts}}{\text{Amperes}^2}$$

Watts

$$\text{Volts}^2 \times \text{Ohms}$$

$$\text{Amperes}^2 \times \text{Ohms}$$

$$\text{Volts} \times \text{Amperes}$$

Wattage varies directly as ratio of voltages squared

$$W_2 = W_1 \times \left(\frac{V_2}{V_1}\right)^2$$

3 Phase Amperes = $\frac{\text{Total Watts}}{\text{Volts} \times 1.732}$

engineering constants

$$1728 \text{ Cu. In.} = 1 \text{ Cu. Ft.} = 7.48 \text{ Gal}$$

$$1" = 2.54 \text{ Cm}$$

$$3412 \text{ Btu} = 1 \text{ Kwh} = 1.34 \text{ Hp Hour}$$

$$491 \text{ Btu/Ft.}^2 = 1 \text{ Watt Hour/In.}^2 = \text{Heat Density}$$

$$1 \text{ Btu/Lb.}^\circ\text{F} = 1 \text{ Gram-Cal./Gram }^\circ\text{C} = \text{Specific Heat}$$

$$231 \text{ Cu. In.} = 1 \text{ Gal}$$

$$1 \text{ BTU} = 252 \text{ Calories} = .293 \text{ Watt-Hours}$$

$$1 \text{ BTU/Lb.} = 1.8 \text{ Calories/Gram}$$

$$1 \text{ HP} = 745.2 \text{ Watts}$$

$$1 \text{ Gal. Water} = 8.3 \text{ Lbs.}$$

$$1 \text{ Gal.} = 231 \text{ Cu. In.} = 3.785 \text{ Liters} = 1.227 \text{ Cu. Ft.}$$

$$1 \text{ Cu. Ft.} = 1728 \text{ Cu. In.} = .03704 \text{ Cu. Yd.} = 7.481 \text{ Gal.}$$

$$3 \text{ Phase Amps} = \frac{\text{Total Watts}}{\text{Volts}} \times 1.73$$

Wattage varies directly as ratio of voltages squared:

$$W^2 = W'X (E^2/E')^2$$

Instrumentors Supply

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