PRODUCT
INFORMATION

PROCESS TECHNOLOGY®

Lufran DI Water Series Heater

Ultra-pure, ultra-reliable high purity water heater! Utilizing PTFE and PVDF wetted surfaces, the Lufran DI Series is the preferred and industry-leading heating solution for highly-critical semiconductor and flat panel display manufacturing processes. Featuring an advanced temperature control system and sizes up to 312kW, this is the ultimate in ultra-pure deionized water heating.

Temperature: Up to 90°C	Pressure: Up to 689 kPa
Watts: 24kW to 312kw	Certifications: UL compliant, SEMI S2/S3 and CE optional
Volts: 200 to 600 V, three phase standard, single phase optional	

Compatibility

NO	YES	NO	NO	NO
acids	water	bases	solvents	gases

BEST IN CLASS!

FEATURES

Complete (turn-key) System

- Only plumbing and main power required
- Allows for fast and easy installation
- Space saving design minimizes footprint requirements

DAC™ (Demand Anticipation Control) Temperature Control System

- Patented temperature/flow algorithm calculates exact heater output requirements for precise temperature control
- Responds instantly to changes in flow to minimize temperature fluctuations at the outlet
- Improves process consistency and yields
- Quick heat-up and recovery times reduce water consumption

Patented Purged PTFE-Covered Heating Element Design

- Maintains DI water cleanliness to decrease wafer defect
- Monitors integrity of element tubing for breach detection
- Removes permeation to extend element life expectancy
- Documented "mean time between failures" of nearly 10 YEARS!

Additional Benefits

- 99% efficient heating element reduces waste energy consumption
- No consumable halogen lamps to replace minimizes downtime and overall cost of ownership

APPLICATIONS

- Semiconductor
- Flat Panel Display

Lufran Ultra Pure Water Heater

APPLICATIONS

- Semiconductor wet processes
- Filtration
- Sterilization/cleaning

SPECIFICATIONS

Wattages	24 kw to 312 kW
Voltages	Up to 600 volts, 3 phase (single phase optional)
Temperature Range	Up to 95° C.
Temperature Accuracy	Lufran - (DAC) Temperature Accuracy: +/– 0.3°C, depending on operating conditions. Lufran LT - (PID) Temperature Accuracy: +/– 3°C, depending on operating conditions.
Flow Rate	1 - 200 LPM
Standard Features	EMO Circuit (local and remote) Ground Fault Protection USB Data Logging Capacitive Liquid Level Sensor Protection on Elements System Pressure Monitor Purge Control Monitors Process High Pressure Alarm PVDF Pressure Relief Valve Heater Overtemp Circuitry

MODEL NUMBER BREAKDOWN

LUF - 105 - 6 U U 5 - SK-CE

Model Version
LUF (DAC Control)
LLT (PID Control)

Wattage
024 = 1 column
036 = 1 column
052 = 1 column
065 = 1 column
072 = 1 column
078* = 1 column
105 = 2 columns
130 = 2 columns
144 = 2 columns
156* = 2 columns
195 = 3 columns
210* = 4 columns
260* = 4 columns
288* = 4 columns
312* = 4 columns

Voltage
1 = 208V
2 = 240V
3 = 380V
4 = 400V
5 = 415V
6 = 480V
7 = 440V
9 = 220V
10 = 200V
12 = 120V
14 = 600V
15 = 230V

Inlet Plumbing
A = 1/2 inch Flared
B = 3/4 inch Flared
C = 1 inch Flared
L = 25 mm Butt Fusion
N = 32mm Socket Fusion Union
P = 1/2 inch Pillar
Q = 3/4 inch Pillar
R = 1 inch Pillar
S = 3/8 inch Flared
T = 3/8 inch Super 300 Pillar
U = 25mm Socket Fusion Union (Standard)
V = 1/2 inch Super 300 Pillar
W = 3/4 inch Super 300 Pillar
X = 1 inch Super 300 Pillar

Outlet Plumbing
A = 1/2 inch Flared
B = 3/4 inch Flared
C = 1 inch Flared
L = 25 mm Butt Fusion
N = 32mm Socket Fusion Union
P = 1/2 inch Pillar
Q = 3/4 inch Pillar
R = 1 inch Pillar
S = 3/8 inch Flared
T = 3/8 inch Super 300 Pillar
U = 25mm Socket Fusion Union (Standard)
V = 1/2 inch Super 300 Pillar
W = 3/4 inch Super 300 Pillar
X = 1 inch Super 300 Pillar

Flow Control
0 = Not Supplied (LLT version)
5 = Ultrasonic; 2-20 lpm (std for up to 52kW)
6 = Ultrasonic; 10-70 lpm (std for >52kW)
7 = Non-invasive; 0.5-20 lpm
8 = Non-invasive; 1-50 lpm
9 = Ultrasonic; 15-150 lpm, 25.4mm

Options
Blank = No Option
C1 = Ethernet communications
C# = Other communications (see eng.)
RI = Expanded remote interface signals (LUF only)
R# = Other remote interface design (see eng.)
= Custom design (see eng.)
UPS = Battery style backup
PS= Similar to UPS but with no batteries
EF = Flush mount EMO guard
LK = Leak Detect Switch
CE = CE certification
SK = Stack light
MB = Monitor boards for SSRs included

DAC™ DEMAND ANTICIPATION CONTROL available on Lufran only

Extremely precise temperature control and stability: Utilizes a patented temperature/flow algorithm to calculate exact heater output requirements. (DAC)

- Sterilization/Cleaning
- Required percentage power
- Flow Rate
- Actual Power Applied
- Low Temperature Boost
- High Temperature Shut-off

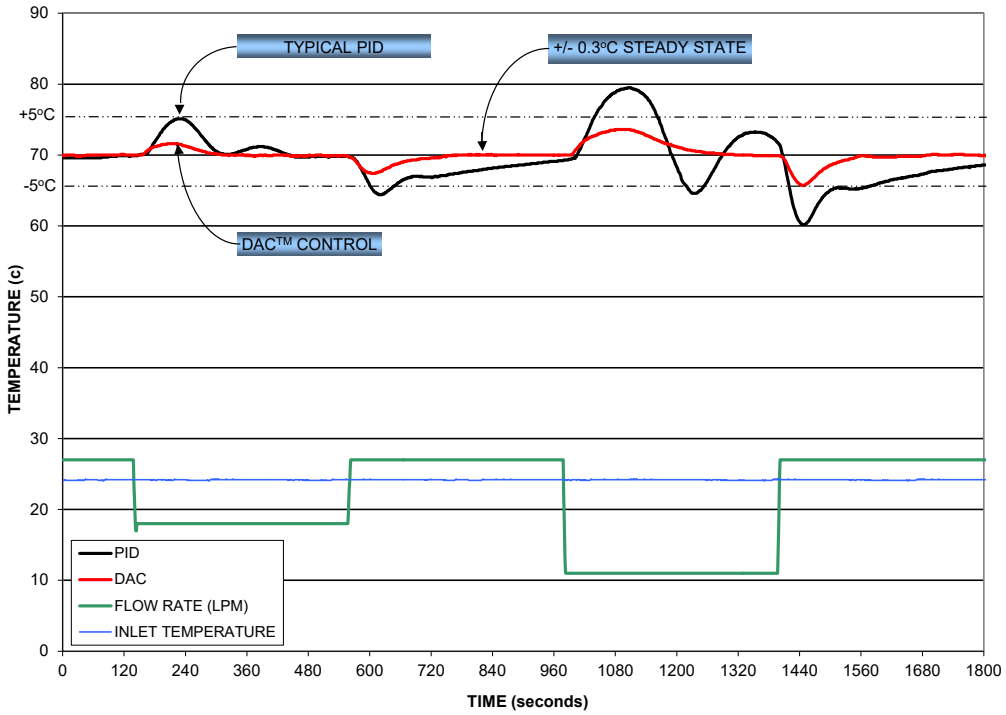
Quick reacting: Responds instantly to flow changes rather than simply monitoring outlet temperature.

Better temperature stability: Responds quickly to recipe (flow and temperature) changes.

Water conservation: Faster heat up and recovery means less water usage.

Friendly operator interface (User friendly HMI): Touch pad display with easy to understand commands.

DAC™ CONTROL COMPARED TO PID CONTROL



ADVANTAGES OF DAC™ CONTROL OVER PID CONTROL

- PID controls only monitor one sensor input (monitors outlet temperature).
  The DAC responds instantly to flow changes rather than simply monitoring outlet temperatures.
- PID controls do not recognize changes in flow rate or inlet temperature.
  The DAC responds quickly to recipe (flow and temperature) changes.
- PID controls are much slower to respond to changes in operating conditions.
  DAC controls have quick heat-up and recovery times resulting in less water usage.

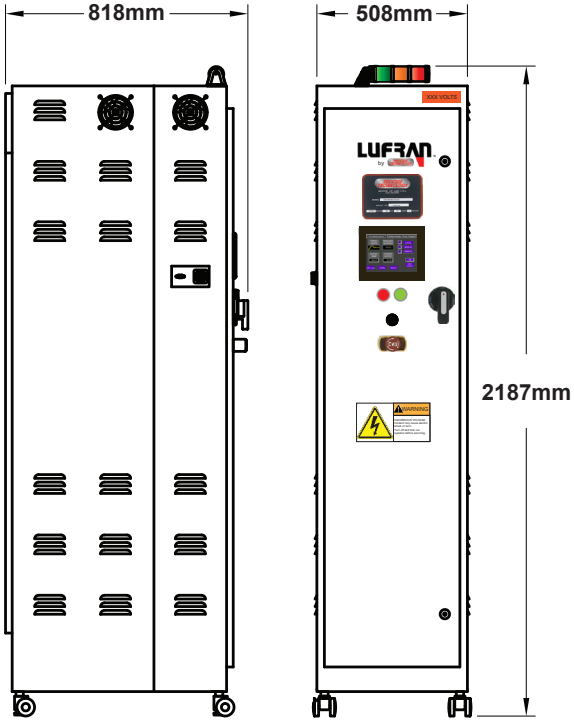


FIGURE A: 24kW - 78kW
HEATER CABINET
(For standard 380V-600V models)

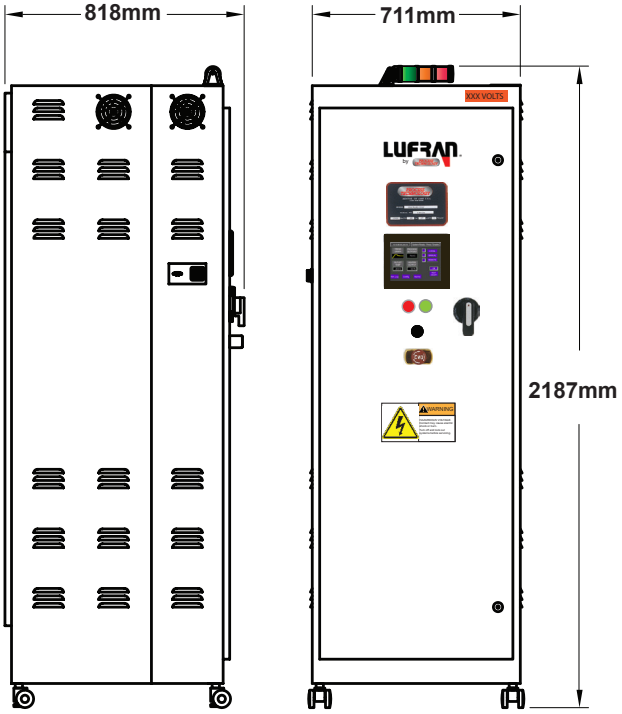


FIGURE B: 90kW - 156kW
HEATER CABINET
(For standard 380V-600V models)

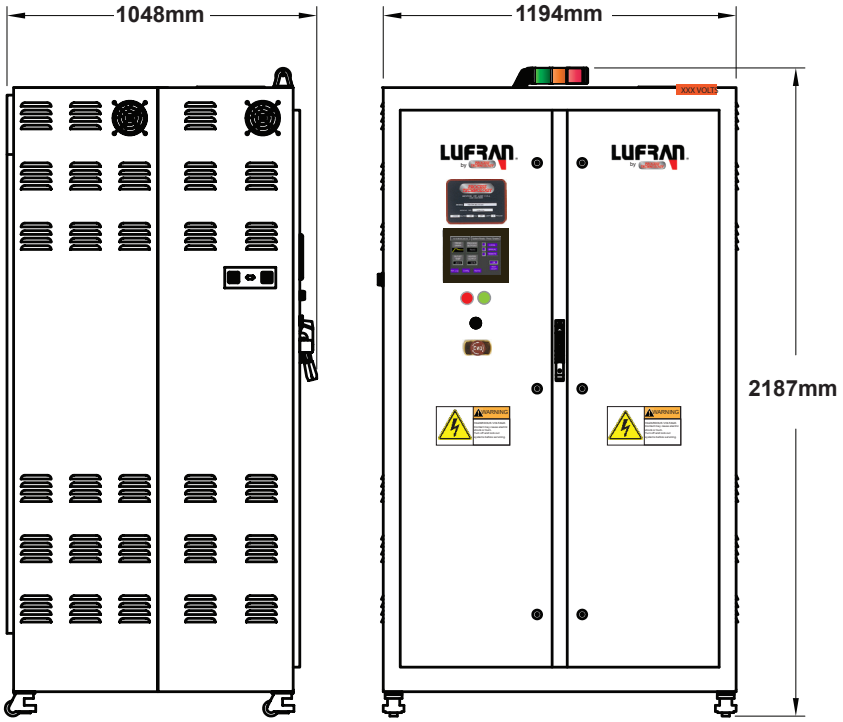


FIGURE C: 157kW - 312kW
HEATER CABINET
(For standard 380V-600V models)