



HEATERS

INNOVATIVE PRODUCTS FOR
SEMICONDUCTOR PROCESSES

WWW.ESPROFLOW.COM



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Inline Heater

The esPRO® Inline Heater uses a PFA insulated electrical resistive element heater. It is designed to safely heat acids, bases, DI water and other noncombustible liquids up to 180°C.

HIGH EFFICIENCY AND PURITY

HIGH RELIABILITY AND LOW MAINTENANCE

COMPACT SIZE FOR EASE OF INSTALLATION

NO NITROGEN PURGE REQUIRED

SEMI S3, CE & UL COMPLIANT

POWER RANGE: 1.0 - 40.0 kW

GROUND WIRE WITH TANTALUM OR PLATINUM TIP

VARIOUS TYPES OF TEMPERATURE SENSORS AVAILABLE



This series of esPRO® Ultra-Pure Inline Heaters is designed for use in ultrapure environments and industrial fluid heating applications such as Semiconductor-, PCB-, MEMS-, Electronics-, LED-, Flat Panel-, Solar cell Manufacturing, Chemical Processing, Aerospace, Life Science industry and other applications which require the highest standards of purity. Constructed of PVDF or PFA materials, these heaters can be custom designed and built for use with deionized water, acids, and other diverse process chemistries. Our heaters are engineered and made in Germany.

Example of standard Inline Heater configurations

PRODUCT NUMBER	MODEL TYPE	HOUSING MATERIAL	TOTAL KW	VAC	PHASE	AMPS	IN/OUT FITTING	THERMO-COUPLE	GROUND WIRE
ESPRO-LH-T01-A-1-020-G1-A1AP09-3S	T-TYPE	PFA**	2	230	1	8.7	3/4"	Type-J	Platinum
ESPRO-LH-T01-A-1-040-G1-A1AP13-3S	T-TYPE	PFA**	4	230	1	17,4	3/4"	Type-J	Platinum
ESPRO-LH-U01-A-1-040-G1-A1AP0R-5S	U-TYPE	PFA**	4	230	1	17,4	3/4"	Type-J	Platinum
ESPRO-LH-TB2-A-1-060-G1-A1BP0E-3S	T-TYPE	PFA**	6	230	1	26.1	1"	Type-J	Platinum
ESPRO-LH-UB1-A-1-060-G1-A1AP03-5S	U-TYPE	PFA**	6	230	1	26.1	3/4"	Type-J	Platinum
ESPRO-LH-T01-A-1-060-K1-A1AP00-3S	T-TYPE	PFA**	6	400	1	15	3/4"	Type-J	Platinum
ESPRO-LH-TB3-A-1-090-O1-A1AP05-3S	T-TYPE	PFA**	9	480	1	18.8	1"	Type-J	Platinum

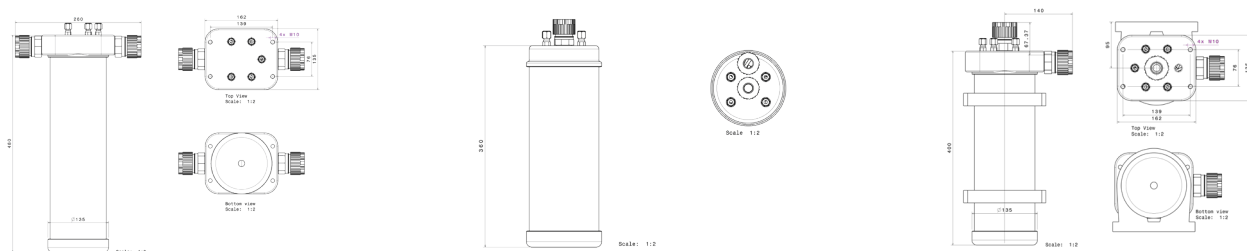
* Custom builds are available.

** Other materials, such as PVDF also available. Please contact us for all options!

Flexible and custom configurations

In addition to our standard configurations, the esPRO® Inline Heaters are also available in custom builds to meet your requirements. Our heaters have a variety of options to comply with your requirements, such as various connections, ground wires, controls, and model types (outlet T, U, Z, I and L or Special design S-Type). These heaters are drop-in and replace products to fit in your existing manufacturing equipment. Please fill out our configuration sheet on www.esproflow.com or contact sales@esproflow.com

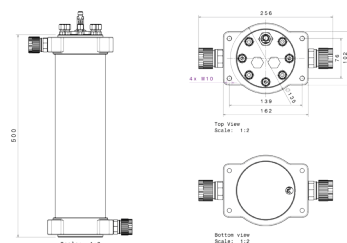
Technical drawings



T-type model

U-type model

L-type model



Z-type model

I-type model



Test reports

All our heaters are delivered including a full individual test report. On the right is an example of a test diagram of general performance for the esPRO® Inline heaters:

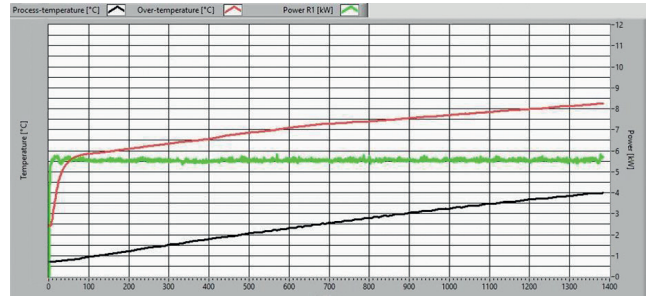


Figure 1: Testing of the esPRO® Inline Heaters

Immersion Heater

The esPRO® Immersion Heater series heats liquids at a constant temperature. They are ideal for use in the semiconductor, pharmaceutical, and biomedical industries. These compact heaters are designed to integrate easily into PVDF, PFA and quartz process tanks. They safely, evenly and efficiently heat acids, bases, DI water and other noncombustible liquids up to 180°C.

ULTRAPURE PFA (TEFLON®) WETTED SURFACES

RELIABLE HEATING OF HARSH CHEMICALS

EFFICIENT AND EVEN, CLEAN HEATING

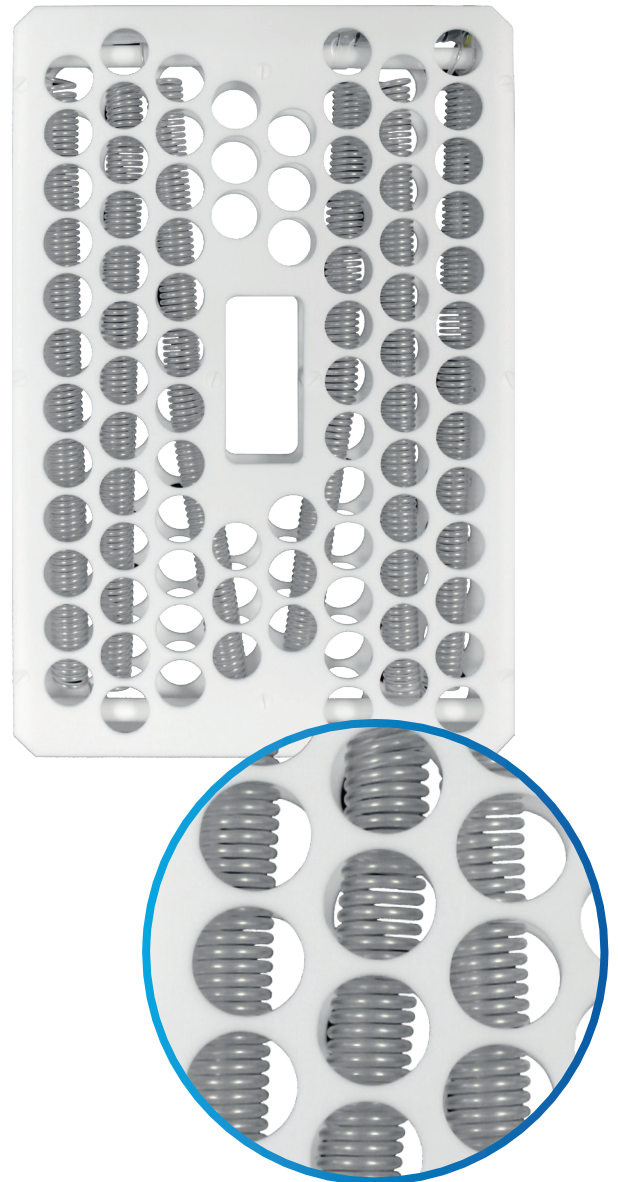
COMPACT DESIGN: MAXIMUM POWER IN A SMALL FOOTPRINT

SEMI S3 & CE COMPLIANT

LOW WATT DENSITY; ≤ 4 WATTS/IN²

GROUND WIRE WITH TANTALUM OR PLATINUM TIP

VARIOUS TYPES OF TEMPERATURE SENSORS AVAILABLE



The heat source is placed in the fluid to reduce heat loss. The heater's low mass and large surface area provide the fastest temperature response time. The system also offers the most comprehensive safety package with redundant interlocks that are integrated into every system. These rugged and durable heaters come in frame designs, with outputs of 1.0 to 40.0 kW. We can arrange a wide range of custom sizes, wattages, and voltages available, please contact us for all options!





Features

- Ultrapure PFA (Teflon®) wetted surfaces
- Reliable heating of harsh chemicals
- Maximum 180°C heating capability
- Low Watt Density; ≤4 watts/in²
- Maximum power in compact footprint
- Heaters designed to customer specifications and process tank sizes for easy integration
- Over-temperature safety thermocouple on heater
- Ground wire with Tantalum or Platinum tip
- Perforated top and bottom floor grid as an option
- Available in several standard models, as well as custom builds. Contact us for all options!

Standard configurations

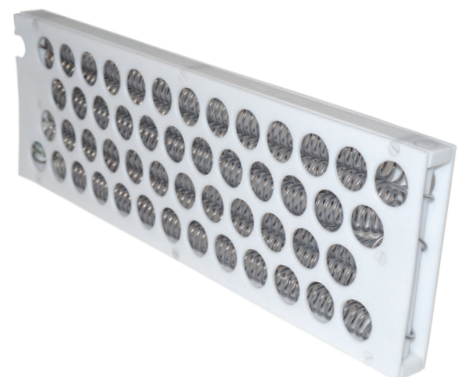
PRODUCT NUMBER	SUITABLE FOR PROCESS TANK SIZE	LENGTH (MM)	WIDTH (MM)	KW	VAC	AMPS
ESPRO-IH-R01-B-TJ-015-G1-040	1 x 4" cassette	180	180	1.5	230	6.52
ESPRO-IH-R01-B-TJ-030-G1-041	2 x 4" cassette	350	180	3.0	230	13.04
ESPRO-IH-R01-B-TJ-015-G1-042	1 x 6" cassette	180	220	1.5	230	6.52
ESPRO-IH-R01-B-TJ-030-G1-043	2 x 6" cassette	360	220	3.0	230	13.04
ESPRO-IH-R01-B-TJ-030-G1-046	1 x 8" cassette	250	280	3.0	230	13.04
ESPRO-IH-R01-B-TJ-050-K1-045	2 x 8" cassette	470	280	5.0	400	12.50

* Custom builds and other voltages are also available. Please contact us for all options!

Flexible and custom configurations

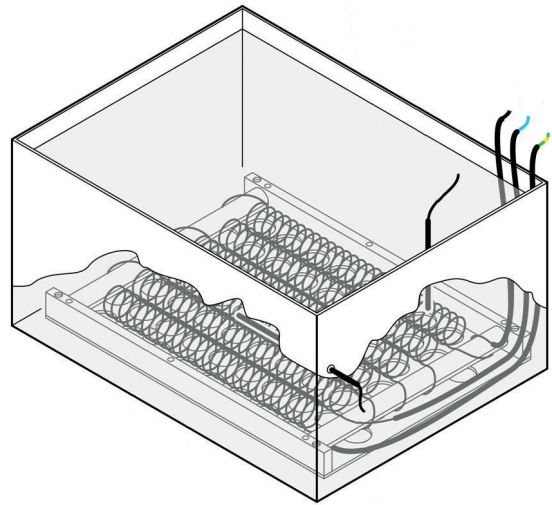
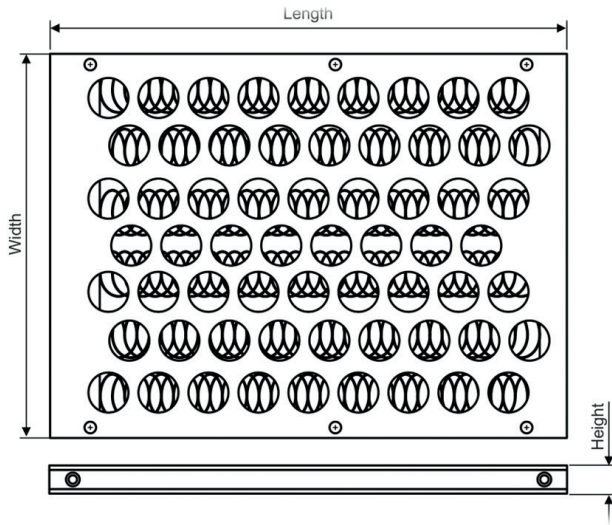
In addition to our standard configurations, the esPRO® Immersion Heaters are also available in custom builds to meet your requirements.

All our heaters are compatible with our quartz tanks, please also see our separate quartz tank datasheet.



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Technical drawings



The dimensions (length x width x height) of our Immersion Heater can be customized.

Tank Heater

The esPRO® Tank Heater series are great for heating high purity chemicals and DI water in storage and supply tanks to a constant temperature. These heaters are ideal for use in the semiconductor, pharmaceutical, and biomedical industries. The Tank Heaters provide clean heat evenly and efficiently within the liquid volume. Furthermore, they are compact and highly customizable to fit into any size of storage tanks or recirculation tanks. Moreover, wetted surfaces feature all-PFA materials, and may be used in tanks made of PVDF, PFA, or quartz.

ULTRAPURE PFA (TEFLON®) WETTED SURFACES

RELIABLE HEATING OF HARSH CHEMICALS

MAXIMUM 180°C HEATING CAPABILITY

MAXIMUM POWER IN A SMALL FOOTPRINT

LOW WATT DENSITY; ≤ 4 WATTS/IN²

GROUND WIRE WITH TANTALUM OR PLATINUM TIP

CUSTOM DESIGNED FOR EASY INTEGRATION

MULTIPLE STACK CONFIGURATION AVAILABLE

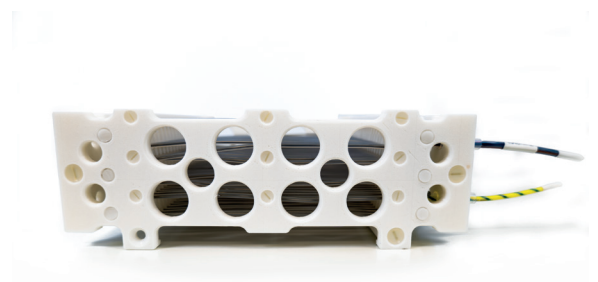
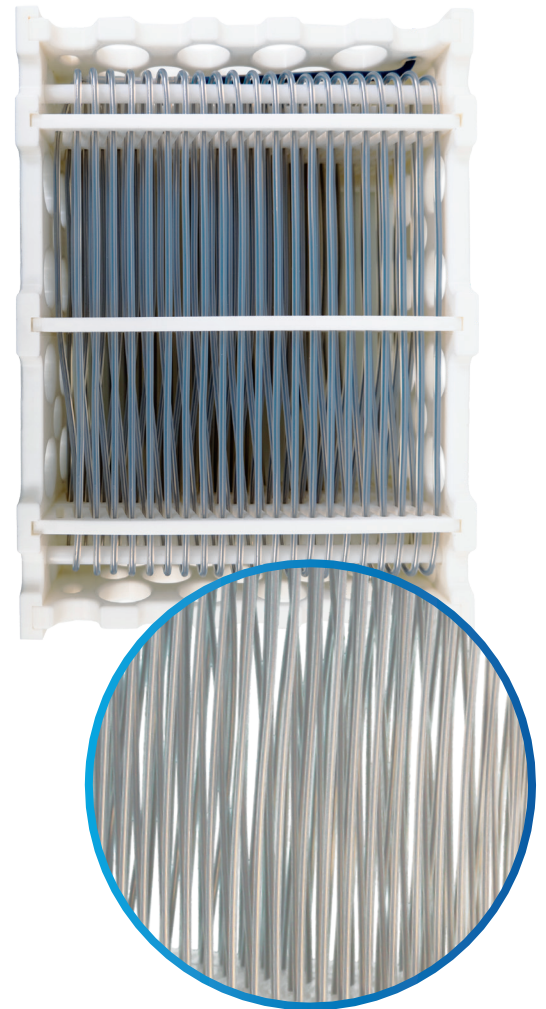


Figure 1: Side view of the esPRO® Tank Heater

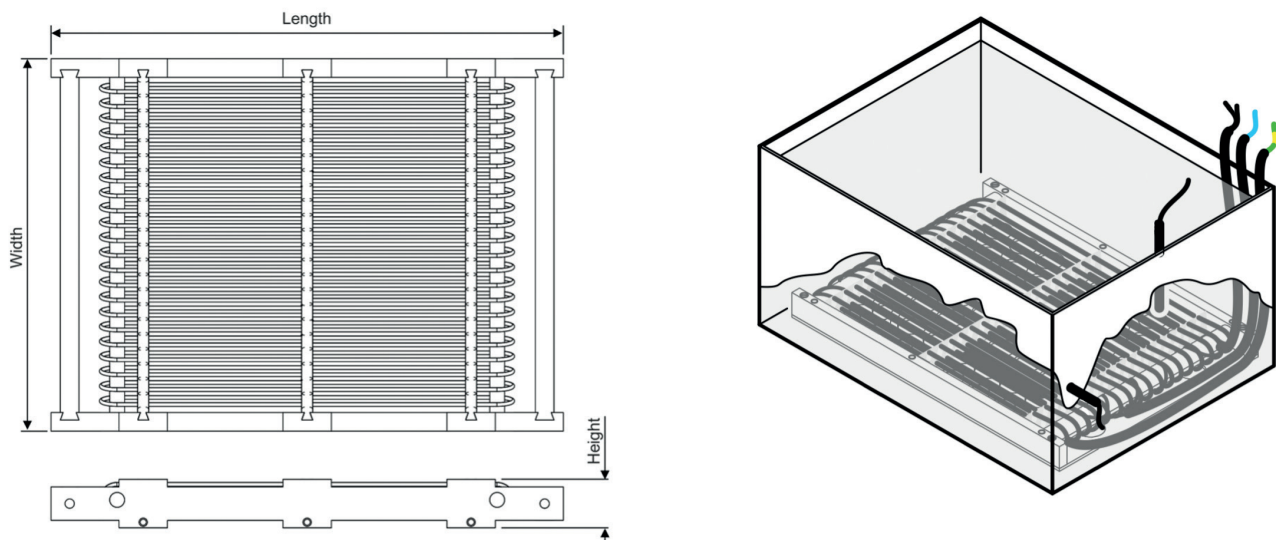
The heat source is placed directly in the liquid to eliminate any heat loss. The heater's low mass and large surface area provide the fastest temperature response time. The displacement volume is minimal due to its open design.

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Features

- Ultrapure PFA wetted surfaces
- Maximum 180°C heating capability
- Low Watt Density; ≤ 4 watts/in²
- Maximum power in small footprint
- Power range from 1 - 40 kW, 100 - 500 VAC, single heater element or delta wired 3-heater elements
- Ground wire with Tantalum or Platinum tip
- Custom designed according to specifications and tank sizes for easy integration and maintenance
- Multiple stack configuration available
- Embedded Heater Over-temperature sensor included by default. Additional liquid overtemperature and process temperature control sensors are available

Technical drawings




The dimensions (length x width x height) of our Tank Heater can be customized.

HIGH QUALITY FLUID HANDLING SOLUTIONS

At SPS we believe technology moves the world forward. Not only in terms of growth, but also in terms of efficiency and sustainability. We are proud to be a part of an industry that holds the key to a better future for all. And we are extremely driven to help you innovate and improve your semiconductor production processes with innovative products, advice and service.

For that we have manufactured our own esPRO® line of fluid handling products including: flowmeters, pumps, heaters, spare parts and a line of filtration products. Combined with more than 35 years of experience in the semiconductor industry, SPS can truly help and inspire you towards more innovative production and a better future for all.



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