

**KANTHAL®**

Part of Sandvik Group

PERFORMANCE.  
ENDURANCE. EXCELLENCE.

KANTHAL® FLOW HEATERS



# KANTHAL® FLOW HEATERS

## KEY FEATURES

- Highest outlet temperatures of 1100 °C due to unique patented design
- Standard Flow Heater series for use with Air (1100°C) and Nitrogen (1000°C), other gases upon request in custom designs
- Wide flow rate range: 20 – 200 % of the nominal flow rate
- Power density comparable with gas burners
- Excellent outlet temperature accuracy ( $\pm 1^\circ\text{C}$ )
- Internal thermocouple for secure over temperature protection and controls
- Empower your Flow Heater with well-matched original accessories like control cabinets, blowers, customized piping and high-performance insulation solutions
- Small in feature size
- Pulsating flow can be tolerated by the Flow Heater

## APPLICATIONS

- Furnace processes and heating of process gases
- Test benches
- Pre-Heating of equipment in metal cast houses
- Local heat treatment

## INDUSTRIES

- Local heat treatment
- Glass industry
- SOFC
- Packaging
- R&D

## GLASS INDUSTRY



## LOCAL HEAT TREATMENT



## SELECT YOUR FLOW HEATER

### POWER REQUIREMENT

Heating power demand

$$P = \dot{m} \cdot c_p \cdot \Delta T = \rho_s \cdot \dot{V}_s \cdot c_p \cdot (T_{out} - T_{in})$$

Power	$P$	kW
Mass flow rate	$\dot{m}$	kg/s
Standard* gas density	$\rho_s$	kg/m <sup>3</sup>
Standard* volume flow rate	$\dot{V}_s$	
Specific heat capacity	$c_p$	kJ/(kg K)
Temperature difference	$\Delta T$	K
Outlet temperature	$T_{out}$	K
Inlet temperature	$T_{in}$	K

\*Standard condition at 1.013 barabs, 0°C

A power safety in the range of 10 to 20% on the theoretical required power is recommended. Piping and thermal insulation downstream of the Kanthal Flow Heater may cause higher heat losses that need to be added to the power requirement. Applications with power higher than 40 kW require customized or parallel usage of standard Flow Heater's. The recommended solution is mostly the parallel usage of multiple Flow Heater for optimal lifetime and availability of spare parts.

## STANDARD KANTHAL® FLOW HEATER SERIES

### SCOPE OF SUPPLY

The standard Flow Heater series are equipped with


- Type S thermocouple for temperature control and overheating protection of the heating element.
- High performance insulation.
- Mounting bracket.
- 2.5 m power cable (heat resistant silicone).

Standard pipe dimensions of the KFH outlet allow welding with state of the art high temperature resistant stainless-steel pipes (310 or similar). On request the outlet can be supplied with different types of high temperature connections (for example flanges).

# KANTHAL® FLOW HEATERS STANDARD SERIES

## SPECIFICATIONS

### GENERAL

Model	KFH2-03-230 KFH2-11-400 KFH2-20-400 KFH2-30-400 KFH2-40-400
Directive	Low Voltage Directive 2014/35/EU
 European Community	DIN EN 60519-1 DIN EN-60335-1
Usage ambient temperature	0...40 °C 32...104 °F



Kanthal® Flow heater 40 kW

## PERFORMANCE CURVES

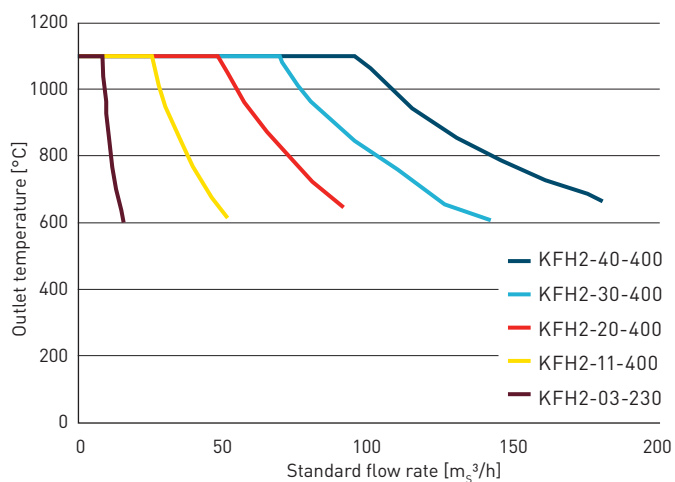


Figure 1: Outlet temperature (with air).

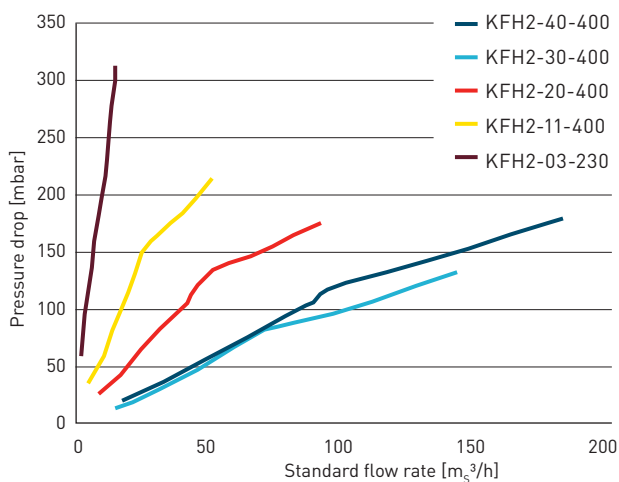
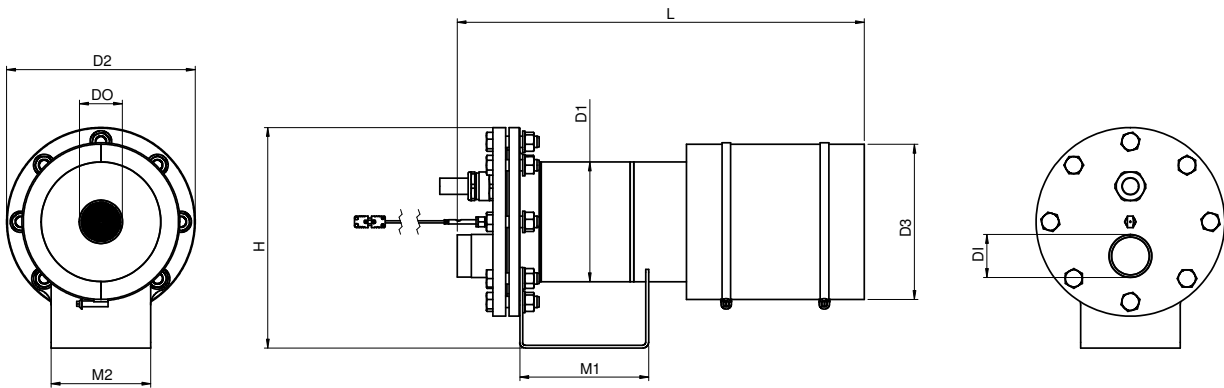


Figure 2: Pressure drop (with air).

### HEAT & FLOW DETAILS (AIR)

PRODUCT CODE	MAX. OUTLET TEMPERATURE		MAX. INLET TEMPERATURE		NOMINAL FLOW RATE		MINIMUM FLOW RATE		MAXIMUM FLOW RATE		PRESSURE DROP AT NOM. FLOW RATE		MAX. OPERATING PRESSURE	
	$T_{OUT,MAX}$		$T_{IN,MAX}$		$V_{\text{NOM}}$	$M_{\text{NOM}}$	$V_{\text{MIN}}$	$M_{\text{MIN}}$	$V_{\text{MAX}}$	$M_{\text{MAX}}$	$\Delta p_N$		$p_{MAX}$	
	°C	°F	°C	°F	m <sup>3</sup> /h	kg/h	m <sup>3</sup> /h	kg/h	m <sup>3</sup> /h	kg/h	mbar	psi	bar <sub>abs</sub>	psi <sub>abs</sub>
KFH2-03-230	1100	2012	50	122	8	9.6	1.6	1.9	16	19.2	170	2.5	1.5	22
KFH2-11-400	1100	2012	50	122	25	30	5	6	50	60	155	2.3	1.5	22
KFH2-20-400	1100	2012	50	122	45	54	9	10.8	90	108	130	1.9	1.5	22
KFH2-30-400	1100	2012	50	122	68	81	13.6	16.3	136	163	82	1.2	1.5	22
KFH2-40-400	1100	2012	50	122	90	108	18	21.6	180	216	125	1.8	1.5	22



### ELECTRICAL & MECHANICAL DETAILS

PRODUCT CODE	POWER		VOLTAGE		DIMENSIONS							WEIGHT		INLET CONNECTION		OUTLET CONNECTION	
	P	U	L	H	D1	D2	D3	M1	M2	M3	M	DI	DI	DO	DO		
	KW	V PHASE	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	INCH	MM	INCH	
KFH2-03-230	3.5	230 1~	498	170	60.3	140	110	102	70	50	8	12	0.47	26.7	¾		
KFH2-11-400	11	400 3Y	519	221	88.9	190	139	151	100	75	15	26.7	R¾	33.7	1		
KFH2-20-400	20	400 3Δ	490	264	114.3	210	164	136	140	100	19	42.4	R1¼	48.3	1½		
KFH2-30-400	30	400 3Δ	595	289	139.7	240	190	175	140	100	31.5	48.3	R1½	48.3	1½		
KFH2-40-400	40	400 3Δ	562	310	168.3	265	218	181	140	100	36	60.3	R2	60.3	2		

# ACCESSORIES AND SERVICES

Empower your Flow Heater with well-matched original accessories.

## CONTROL CABINET

Kanthal® Control Cabinets are designed and optimized for operation of the standard Flow Heater series and assure maximum heater performance and optimal life-time. Standard Control Cabinets are made for easy to use operation. Besides from that custom solutions can be offered like PLC compatibility and standard automation protocols.



## ELECTRICAL & MECHANICAL DETAILS

PRODUCT CODE	COMPATIBLE TO	DIMENSIONS			WEIGHT M KG	ELECTRICAL SUPPLY		
		L MM	W MM	H MM		U V	I A	
CC-KFH2-03-230-CE	KFH2-03-230	300	300	155	12	230	1L+N	16
CC-KFH2-11-400-CE	KFH2-11-400	300	300	155	15	400	3L+N	16
CC-KFH2-20-400-CE	KFH2-20-400	300	300	155	15	400	3L+N	32
CC-KFH2-30-400-CE	KFH2-30-400	800	600	250	60	400	3L+N	63
CC-KFH2-40-400-CE	KFH2-40-400	800	600	250	60	400	3L+N	63

## BLOWER

Kanthal® Blowers are equipped with flow rate control (variable frequency drive) and with air filter to ensure safe and long-life operation of the Flow Heater. Piping and thermal insulation solution



## ELECTRICAL & MECHANICAL DETAILS

PRODUCT CODE	COMPATIBLE TO	DIMENSIONS			WEIGHT M KG	ELECTRICAL SUPPLY		
		L MM	W MM	H MM		U V	I A	
SCB-KFH2-03-230	KFH2-03-230	422	91	270	8	230	1L+N	2.4
SCB-KFH2-11-400	KFH2-11-400	424	264	380	32	400	3L	16
SCB-KFH2-20-400	KFH2-20-400	424	264	380	32	400	3L	16
SCB-KFH2-30-400	KFH2-30-400	428	306	407	34	400	3L	16
SCB-KFH2-40-400	KFH2-40-400	428	306	407	34	400	3L	16

### PIPING AND THERMAL INSULATION SOLUTION

High temperature piping and proper high-performance insulation completes the Kanthal scope of supply. The temperature is maintained as much as possible to drive your process where it's needed. Piping and thermal insulation solutions can be offered ranging from DN20, ¾" (OD 26.7 mm) to DN150, 6" (OD 168 mm) as well as flanges, elbow pieces and junctions.

### TEST SERVICES

You require a process development or -optimization? Working closely with you, our engineers backed up by one of the R&D's leading facilities, will help you identify your needs and create products that optimize your process or product. Many of our products, now industry standards, are the result of a close collaboration between our customer and our R&D engineers.

