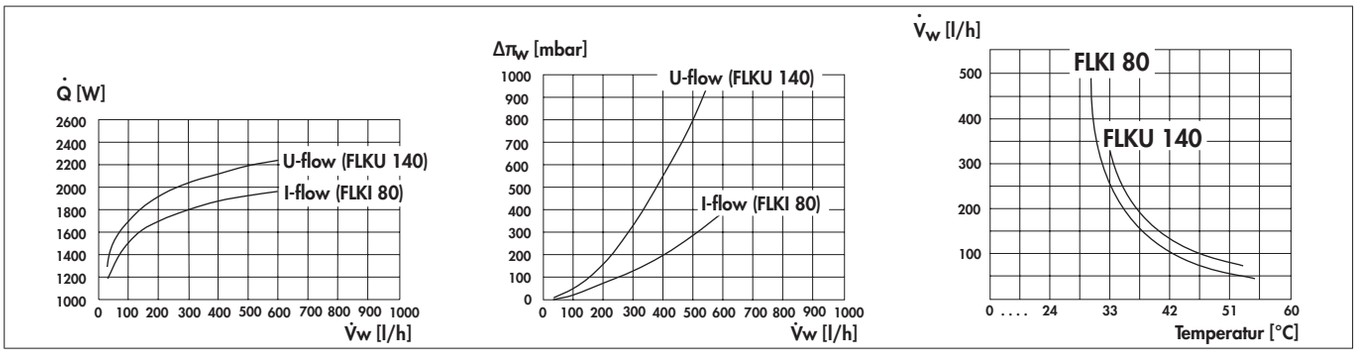
fischer elektronik

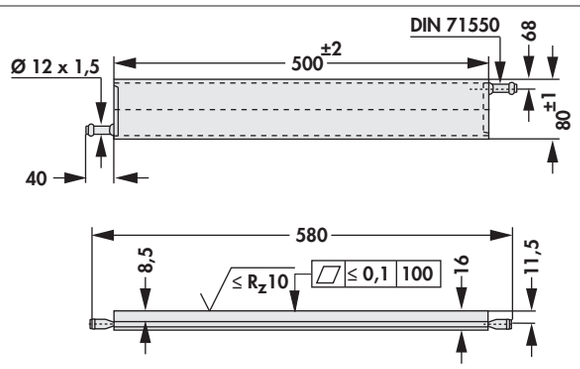
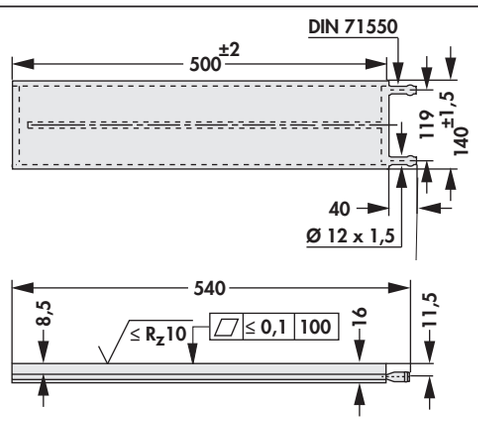
Liquid coolers for power modules

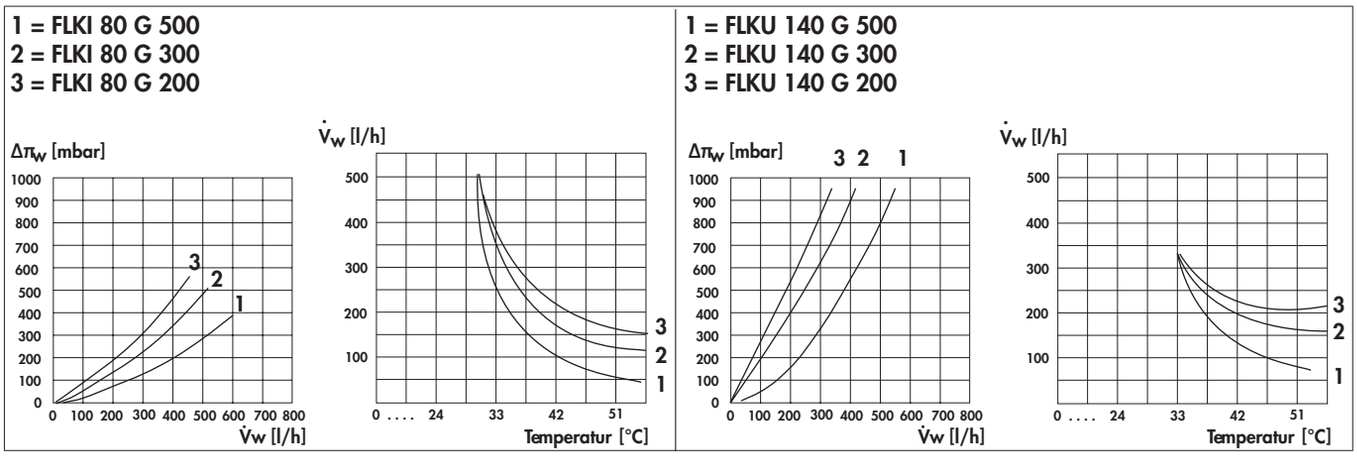


– water-gycol mixture (60/40); inlet temperature approx. 26 °C

Fluid cooler for dissipating large quantities of heat with low space requirement; **effective system to cool power modules**; suitable for water pH 6.5-8.5 with anticorrosives, as well as other fluids (eg. oil, alcohols, etc.); **compact design with internal fin structure for particularly good heat transfer to the fluid**; minimised flow pressure losses (see diagram); **operating pressure up to 2 bar possible**; thick base plate for optimum heat distribution and to secure the heat-emmiting elements; **mounting flange for the cooler according to customer's instructions**; precisely face milled surface of component mounting area with very good flatness and low roughness depth; **dimensionally accurate adjustment to given mounting conditions**; connections using hole ports 12 mm in diameter with reinforcing seam to DIN 71550 or installation flange to customers instuctions; **I- or U-throughflow or multiple throughflow versions**; max. drilling depth in the base plate: 7 mm
To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60 % (preferred is 50 %) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

– dimensions and designs using customer's instructions

art. no.		
FLKI 80		
art. no.		
FLKU 140		
material:	EN AW 6060	

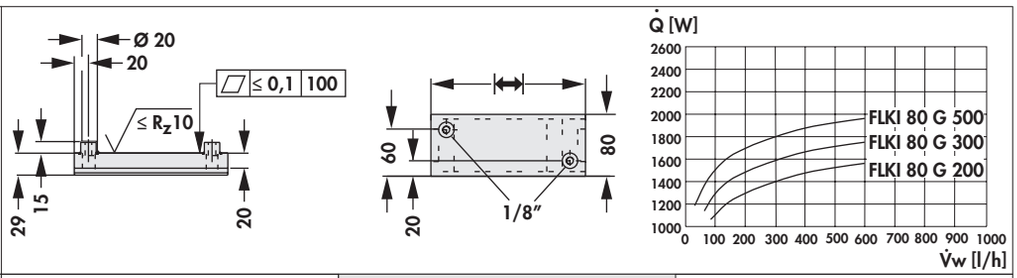


– water-gycol mixture (60/40); inlet temperature approx. 26 °C

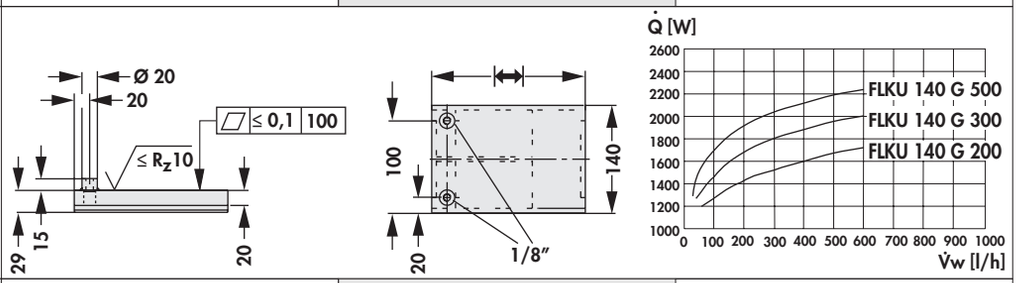
Fluid cooler for dissipating large quantities of heat with low space requirement; **effective system to cool power modules;** suitable for water pH 6.5-8.5 with anticorrosive, as well as other fluids (eg. oil, alcohols, etc.); **compact design with internal fin structure for particularly good heat transfer to the fluid;** minimised flow pressure losses; **operating pressure up to 2 bar possible;** thick base plate for optimum heat distribution and to secure the heat-emitting elements; **mounting flange for the cooler according to customer's instructions;** precisely face milled surface of component mounting area with very good eveness and low roughness depth; **for power modules like IGBT-module, Thyristor-module, SCR diode module, bridge amplifiers and others;** dimensionally accurate adjustment to given mounting conditions; **conncetions with thread muffle 1/8" or mounting flange according to customer's instructions;** I- or U-throughflow or multiple throughflow versions; **max. drilling depth in the base plate: 17 mm**

To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60 % (preferred is 50 %) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

– dimensions and designs using customer's instructions



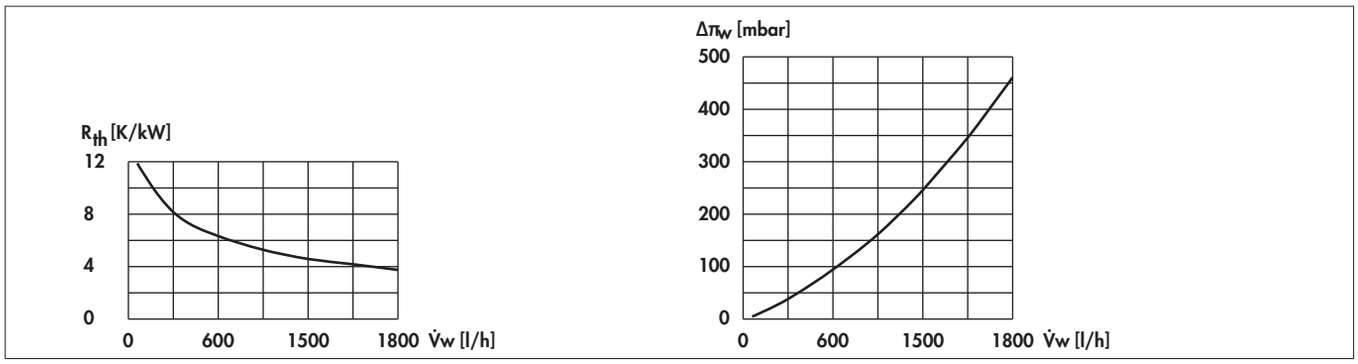
art. no.	↔ [mm]	art. no.	↔ [mm]
FLKI 80 G 200	200	**FLKI 80 G 500**	500
FLKI 80 G 300	300		



art. no.	↔ [mm]	art. no.	↔ [mm]
FLKU 140 G 200	200	**FLKU 140 G 500**	500
FLKU 140 G 300	300		
material:	EN AW 6060		

fischer elektronik

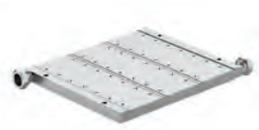
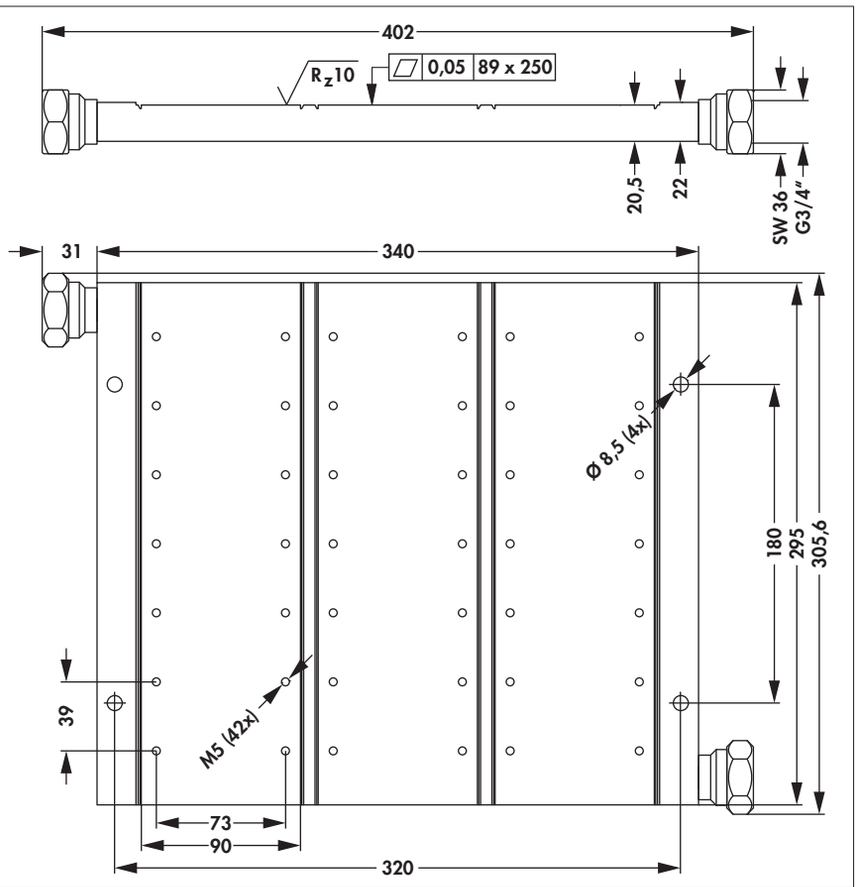
Liquid coolers for power modules

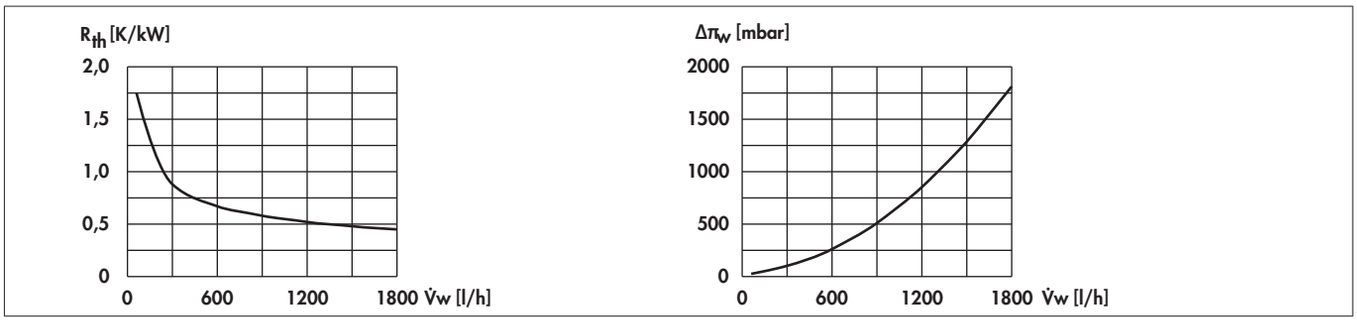


– water glycol mixture (60/40); inlet temperature approx. 26 °C

Liquid coolers of special design for high-power converters PrimePack™3+ module (IGBT 5); **for heat dissipation of maximum 3 modules on one liquid cooler**; suitable for water pH 6,5-8,5 with corrosion protection as well as other fluids (i.e. oils, alcohols, etc.); **particularly good heat transfer to the fluid by means of inner lamellae structure**; operating excess pressure up to 2 bars possible; **thick mounting plate for optimal heat distribution**; mounting of the modules will be done by already installed M5 threads; **threw holes for mounting of the fluid coolers**; precisely milled flat semiconductor mounting surface with very good flatness and low roughness depth; **line connection for water inlet and outlet by means of a G ¾" thread**; special designs and modifications for a specific assembly situation according to customerspecific specifications.

To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60 % (preferred is 50 %) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

art. no.		
FLKI 295		
material:	EN AW 6060	

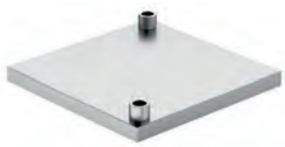
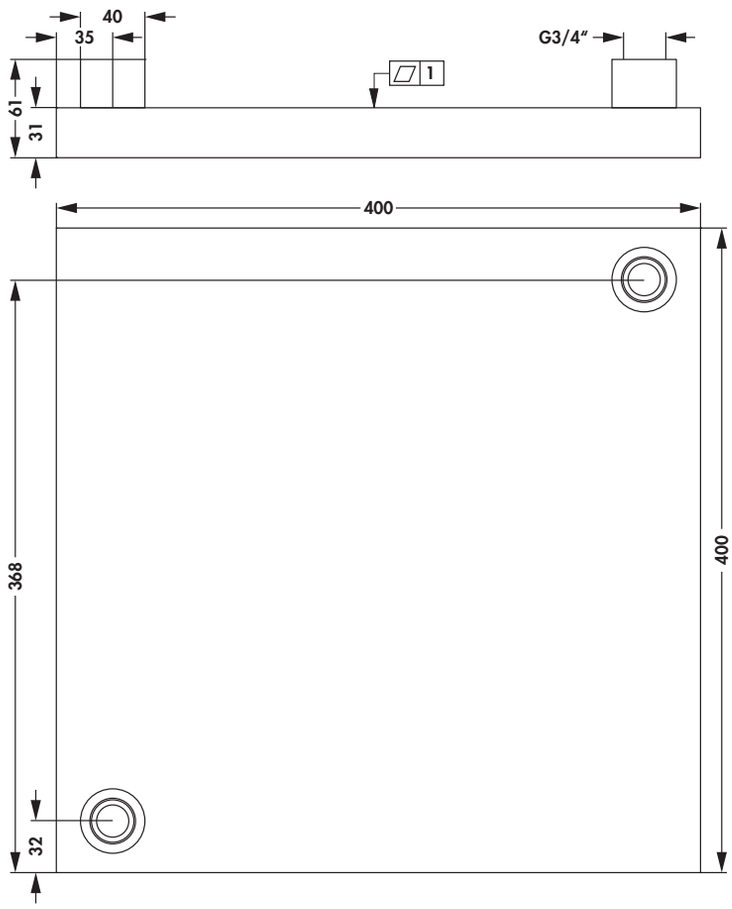


– water glycol mixture (60/40); inlet temperature approx. 26 °C

Fluid cooler for dissipating large quantities of heat with low space requirement; **effective system to cool power modules**; suitable for water pH 6,5-8,5 with anticorrosives, as well as other fluids (eg. oils, alcohols, etc.); **compact design with internal fin structure for particularly good heat transfer to the fluid**; minimised flow pressure losses; **operating excess pressure up to 2 bar possible**; thick base plate for optimum heat distribution and to secure the heat-emitting elements; **mounting flange for the cooler according to customer's instructions**; precisely face milled surface of the component mounting area with very good flatness and low roughness depth; **for power modules such as IGBT-modules, thyristor-modules, SCR diode modules, bridge amplifier and others; dimensional modification at specified installation conditions**; connections via thread G3/4" or mounting flange according to customer's specifications; **drilling depth into the base panel maximum 17 mm.**

To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60 % (preferred is 50 %) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

– Dimensioning and realisation in connection with customer's specifications

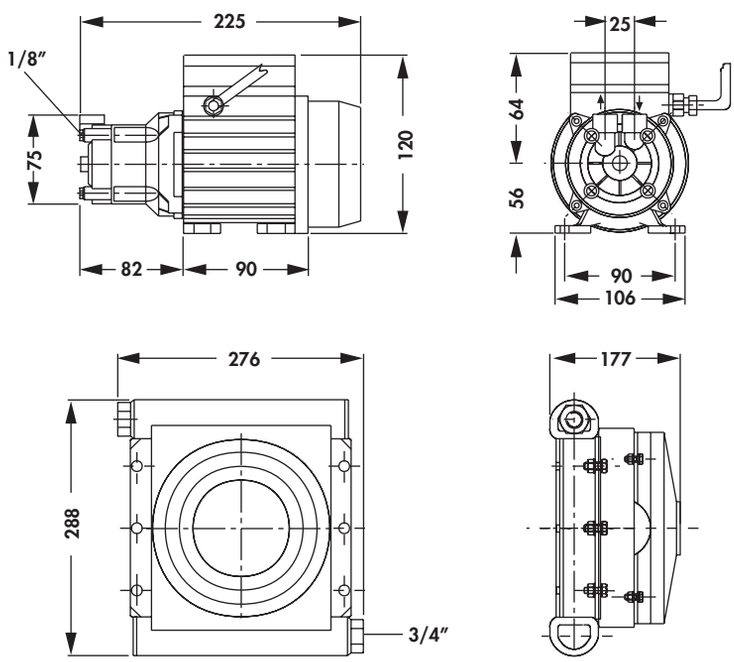
art. no.		
FLKI 400 G 400		
material:	EN AW 6060	

fischer elektronik

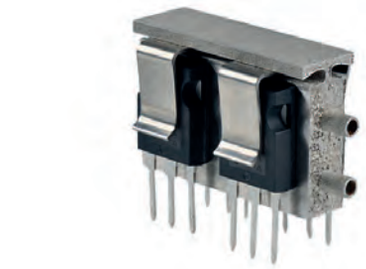
Recooling systems for liquid coolers

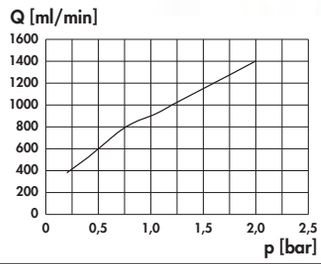
– recooling system for all types of liquid coolers
– cools up to 2,600 watts thermal power loss
– consists of pump and recooler
– pump as normally aspirating, single-stage centrifugal pump with spiral housing in block construction
– recooler with liquid-conducting tube system with air lamella and electrically driven fan motor
– further information free of charge under: **FLK R1-Info**
– notes: anticorrosive agents are required when water is used as coolant (eg. water/glykol - 60/40)
– the hose systems used (NOT in scope of delivery) must be resistant to anticorrosive agents (eg. material EPDM according to DIN 73411, ISO 4081)

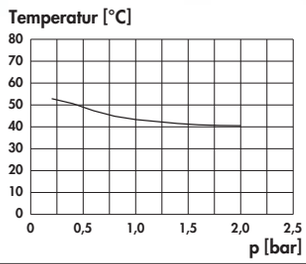
To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60% (preferred is 50%) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

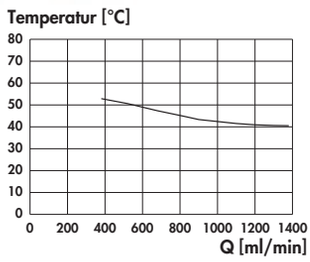
art. no.		
FLKR 1		

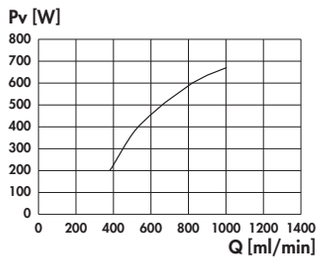
thermal cooling capacity:	max. 2.600 W
pump:	single-phase 230 V AC, 120 W
recooler:	single-phase 230 V AC, 120 W/ three-phase 400 V AC, 90 W
type of delivery:	pump and recooler





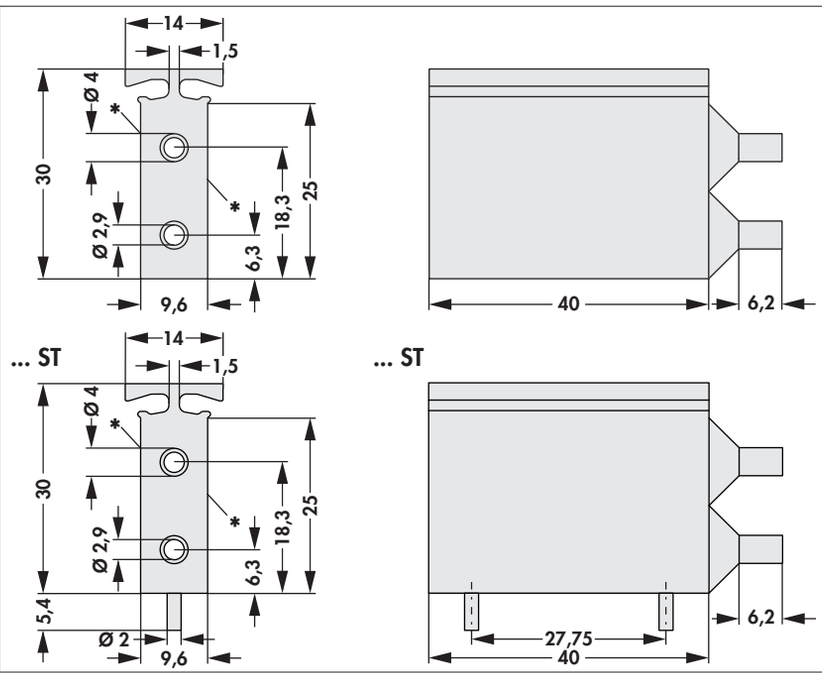






– technical data refer to a water inlet temperature of 23 ° C
– stainless austenitic steel / 1.4404 stainless steel V4A
– water as a cooling medium without corrosion protection inhibitors
– suitable liquid pumps and hose systems on request
– other materials with higher thermal conductivity (nickel) on request
– version with soldering for PCB mounting on request
– customer-specific adaptations and designs

Liquid coolers for circuit board assembly; **produced in 3D printing with an AI-optimized heat exchange structure**; dissipation of large amounts of heat with little space requirement; **particularly suitable for power semiconductors in TO case, SIP Multiwatt and similar**; simple and safe component assembly using lock-in retaining springs for transistors from the THFU series; **separate cooling circuit on each mounting side;** minimized flow pressure losses through optimized heat exchange structure; **finely ground semiconductor mounting surfaces with very good flatness and low surface roughness**; maximum operating pressure up to 3 bar; **max. dissipated power loss with a difference in water temperature (IN = 33 ° C, OUT = 43 ° C) of 670W**; simple connection via plastic hoses from the pneumatics area; **dimensional adjustments to the given installation conditions**

art. no.		
FLKU 10 ...		
	* ground flat	
please indicate:	**... mounting method (optional)** **ST = with solder pin**	
material:	stainless steel 1.4404	