

Industrial Controls LK 11 – 14, LK 21 - 22



Application

Industrial controls are used for the control indication and monitoring of the temperature of cooling and heating systems and for the protection against excess temperature of systems. They are used in hydraulic, lubeoil and for temperature control of other systems.



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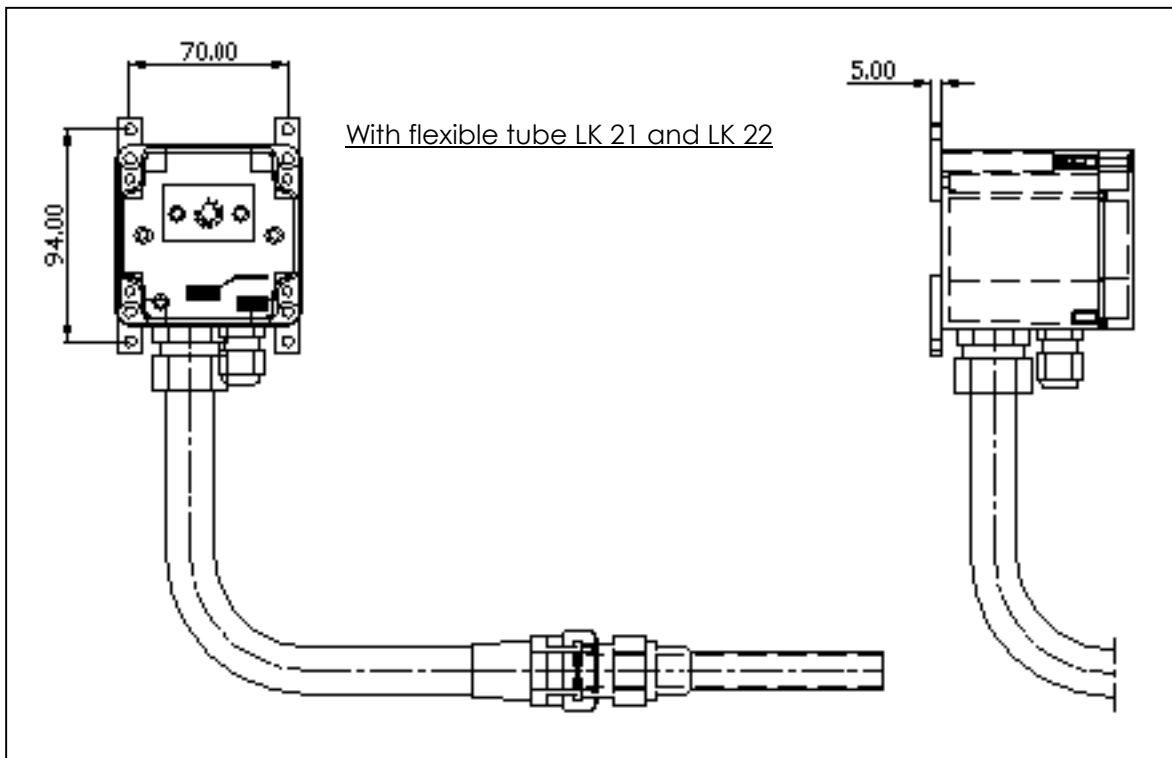
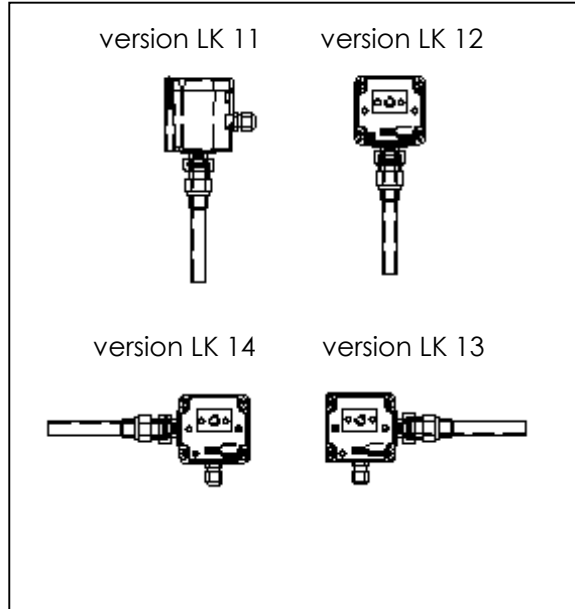
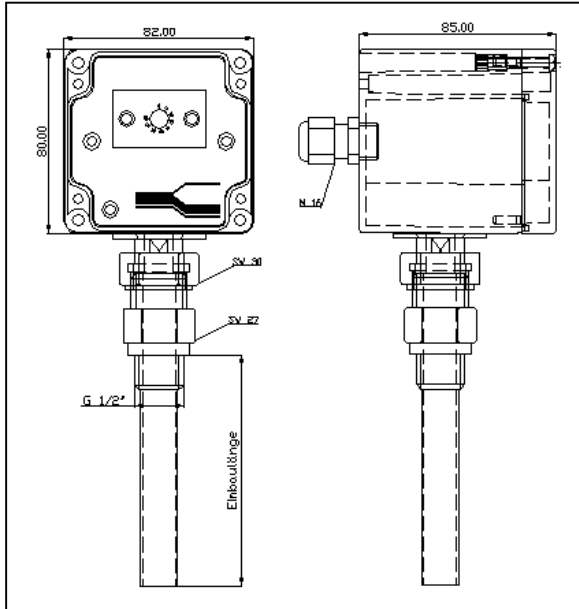
Design

Industrial Controls operate according to the principle of fluid expansion. The temperature sensor is connected with a diaphragm in the control governor via a capillary tube. The volume of the organic fluid in the feeler system varies in direct dependency on the feeler temperature. The diaphragms are moved as a consequence of the change in volume. The movement of the diaphragm is transmitted to an intermittent switch via a rod gear. Thus the governor operates exactly even with slow changes in temperature. Vibrations do not affect the accuracy. The feeler- and contact systems of individual regulators are each absolutely separated. The thermometers are working with spring system and have also separated feeler systems. Nevertheless all feeler systems could be placed together in one pocket.

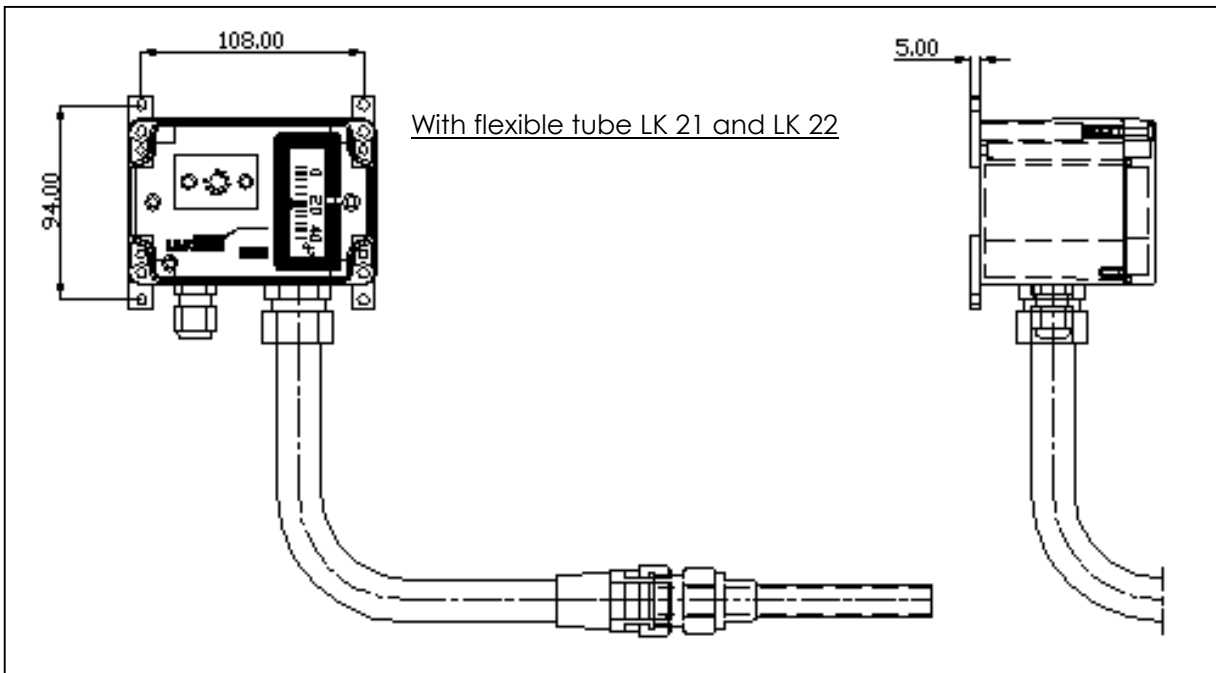
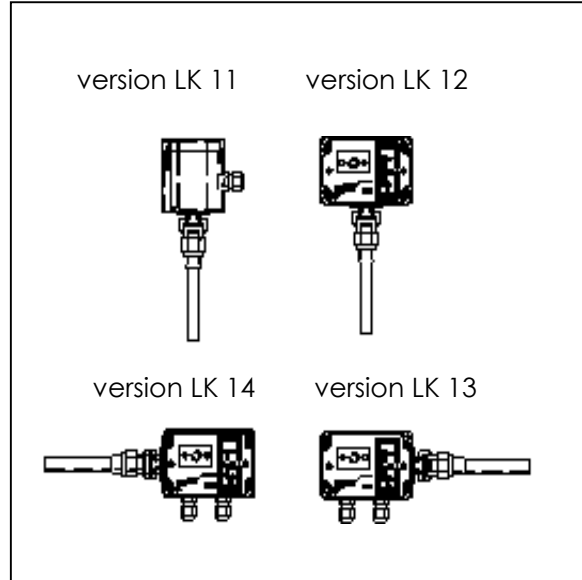
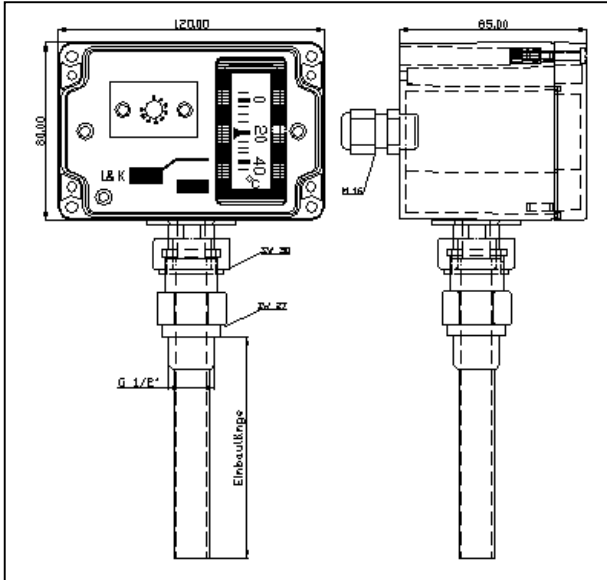
Technical Data

Contact	change over
contact material	hard silver Ag
temp.adjustingrange	-40°C – 160°C
switching precision	~ 4°C
max. ambient temp.	- 40° - 80° C
test certificat	VDE 0631, NF, SEMKO, Demko,, ÖVE, KEMA more certificate on inquiry
insulation	accord. VDE
endosure	IP 65
glands	M16 with traction-relief
max. operating pressure of pocket	16 bar
thermometer range	-40° C - 160 C
indicating accuracy	class 3 accord. DIN 16203
Materials	
housing	Polycarbonat (Makrolon)
immersion shell	1.4301
kabel-glands	Polyamid
feeler a. capillary tube	Cu
max. current/voltage	16A (2,5) / 250VAC 10A (1,5) / 400VAC 0,5A / 24 VDC more data on inquiry
electric strength	2000 VAC between common contact and ground 1150 VAC VAC between open contact

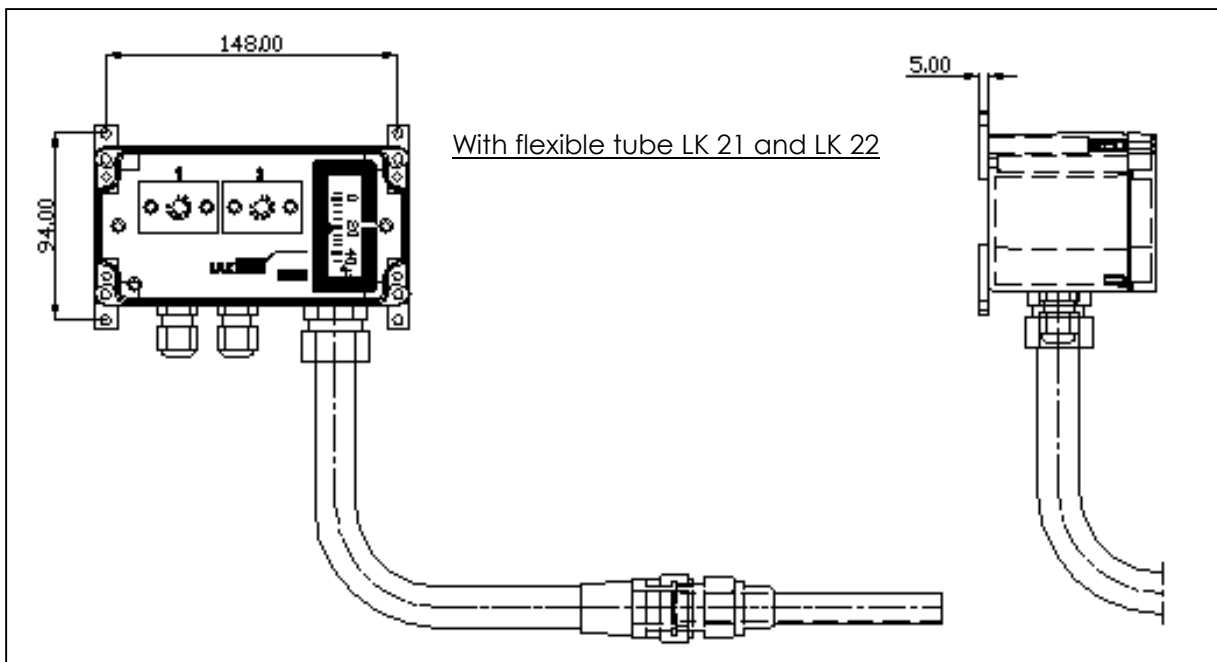
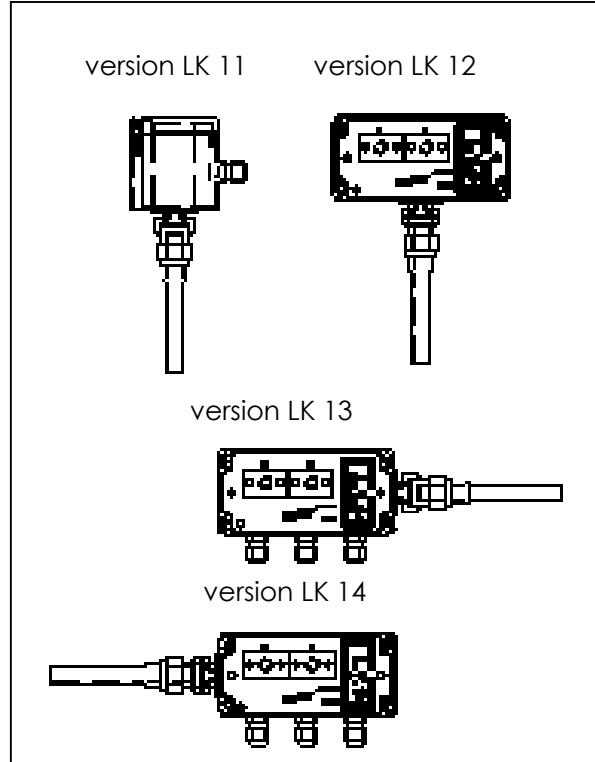
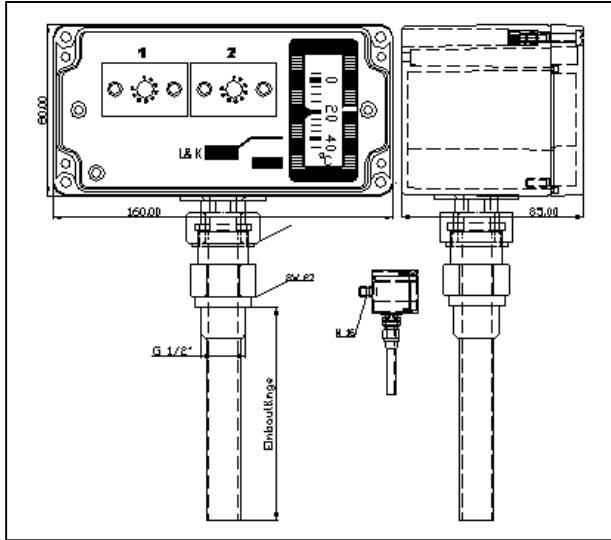
Assembly Type One - function - control



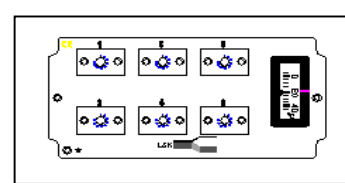
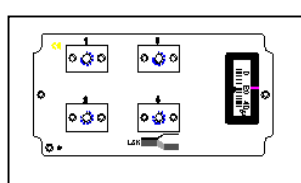
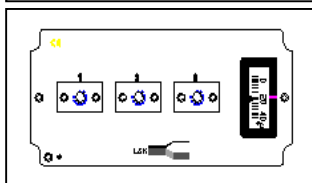
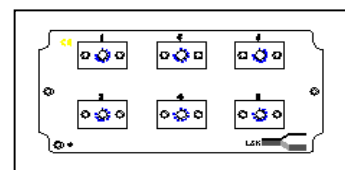
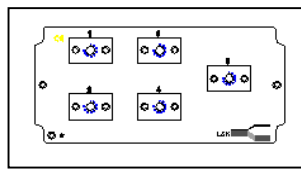
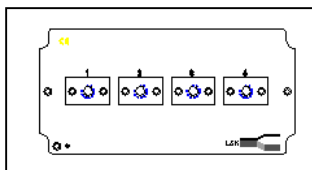
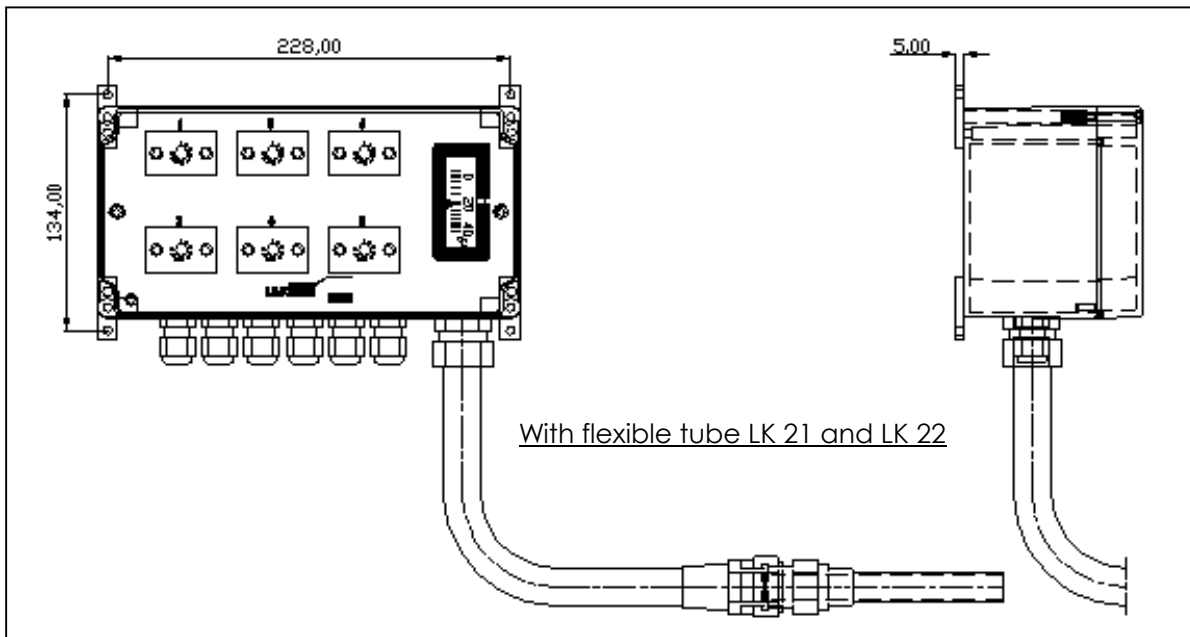
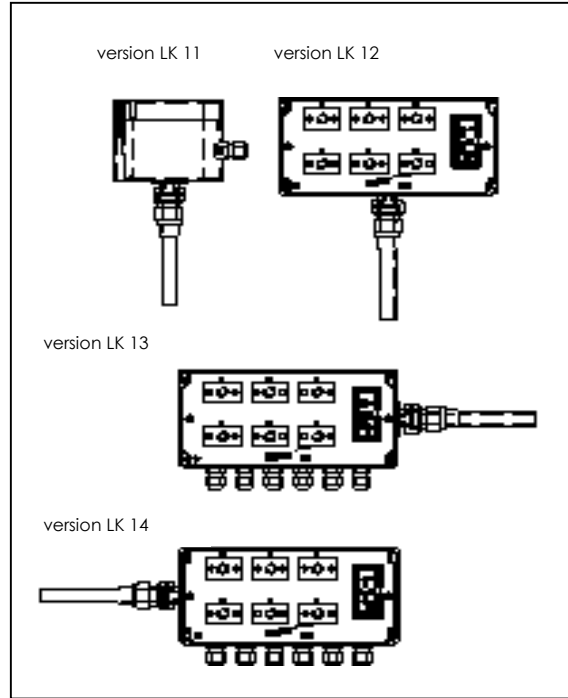
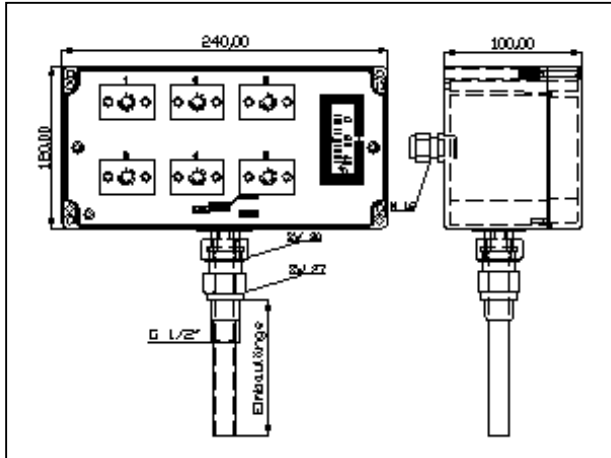
Two – function - control



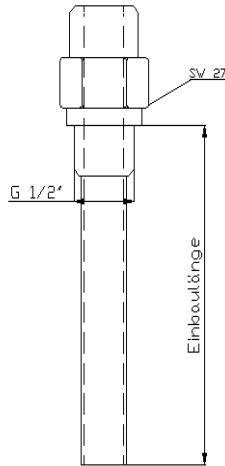
Three – function - control



Four up to seven - function - control



Immersion sheel



Typ	with G1/2"	100	200	300	400	500	900
Laid length	mm	100	200	300	400	500	900
Min. immersion shell length in mm acc. to number of function							
one to three	mm	90					
four ti six	mm	180					
seven	mm	270					

Thermostat and Temperature Indicator

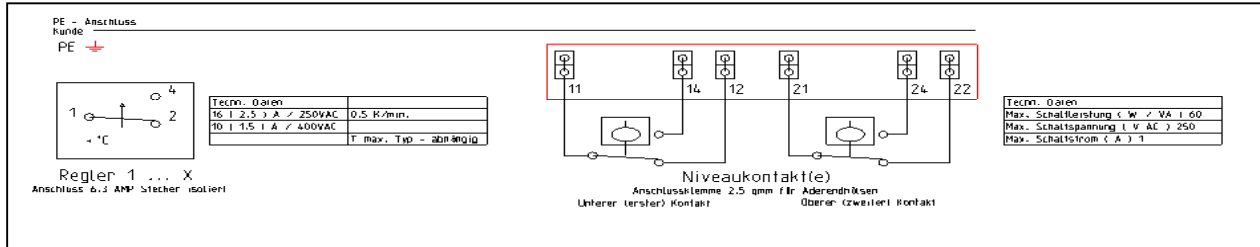
Typ	Function	Range Grad Celsius	max. Feeler Temp	Switch differential Kelvin
000	Regulating thermostat	-30 + 40	80	~5
001	Regulating thermostat	0 + 40	120	~5
002	Regulating thermostat	0 + 80	120	~5
003	Regulating thermostat	10 + 120	160	~5
004	Regulating thermostat	10 + 120	160	~10
005	Regulating thermostat	60 + 160	200	~5
006	Regulating limiter	30 + 90	120	~5
007	Regulating limiter	60 + 150	140	~5
TE	Thermometer	-40 + 60	100	
TF	Thermometer	0 + 120	140	
TG	Thermometer	0 + 160	180	

Connections

Standard flat cable plug 6,3 x 0,8; inclosed flat socket DIN 46247/3

Other Connection:

- 851** equipment plug acc. DIN 43650, 3 + PE, max 1 Function per equipment plug
- 852** equipment plug acc. DIN 43651, 6 + PE, max 2 Functions per equipment plug
- 950** Europa terminal stripe complete wired



Type code

	LK								
Assembly type Montagebauart / Type de montage	11								
Thermostat 1 Regler 1 / Regulateur 1		002							
Thermostat 2 Regler 2/ Regulateur 2			002						
Thermostat 3				003					
Thermostat 4				003					
Thermostat 5				003					
Thermostat 6					003				
Regler 3 , 4, 5, 6/Regulateur 3 , 4, 5, 6									
Temperature Indicator Temperaturanzeige / Indication de temp.						TF			
Immersion sheel Tauchhülse / Douille d'immersion							300		
Connections Anschlüsse / Raccords								Add only by Other Connection	
EX-I Area EX-I Bereich / EX-I Zone Explosive								Add only by Other Connection	
Pilot lamps Kontrolleuchten / Lampes Pilot								On inquiry	