1 Digital display of set value
2 Pushbuttons for adjusting the set values recessed and sealable
3 Internal reset pushbutton
4 LEDs for operating and error displays
5 Function check button

DIN assembly tests:

STB 1146 S	ref. DIN EN 14597
SIL2	ref. IEC 61508
CE 0045	ref. rule 97/23/EG, modul B and D

General:

Two-channel self-monitoring safety temperature limiter, constructed to meet the requirements for increased safety (DIN EN 14597, SIL 2).

The electrical safety circuit is switched off, i.e. opened, if the set value is exceeded or if there is a fault at the measurement input or in the device. A fault signal is also provided at the terminals. The limiter can only be unlatched manually after the fault has been rectified.

The Pt100 measurement input is of the 3-conductor type, so that compensation is automatically provided for cable resistances and intermediate explosion arresters.

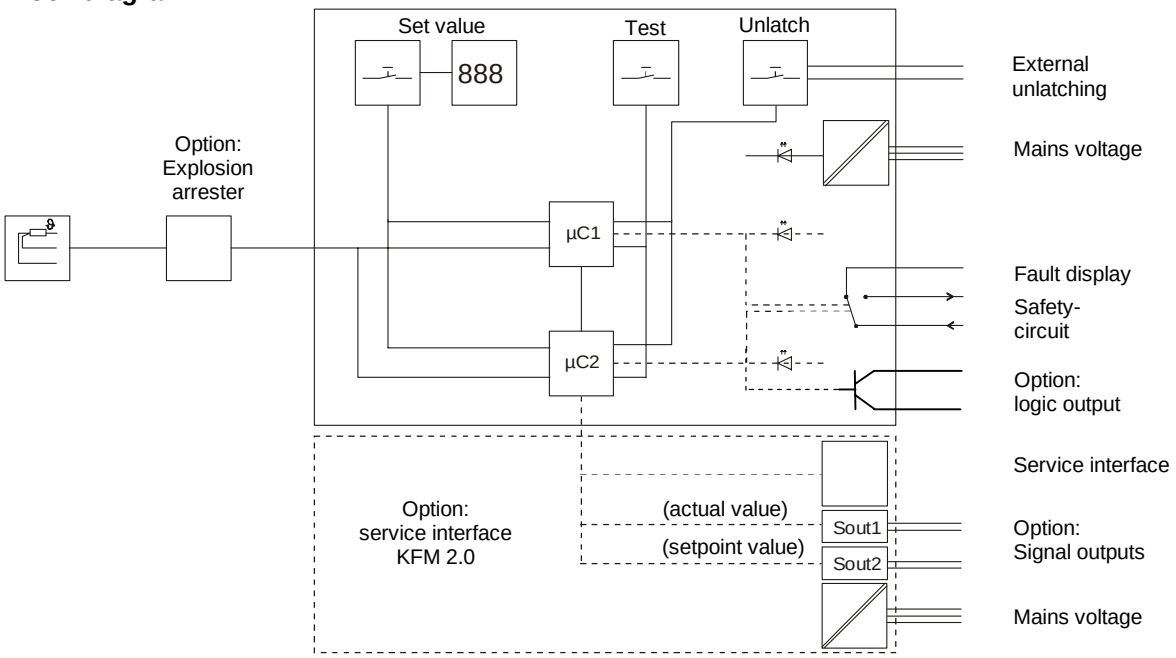
The device includes test buttons with which the specified annual function checks can be carried out very conveniently, without having to disturb the connected cables.

Actual- and setpoint value as well as the status of the relays can be transmitted by using the optional service interface (extra module), actual- and setpoint value can additionally be transmitted by optional signal outputs. In conjunction with external adapters also with Profibus, Modbus, Ethernet etc.

Models:

845 210	Model without display
845 220	Model with display
845 2 ⊥1	Model with additional logic output
845 2….-849s	Model with service interface, protocol KFM 2.0
845 2….-849og2	Model with 2 signal outputs 4..20mA
845 2….-849sog2	Model with service interface and 2 signal outputs 4..20mA
Suffix (also extra module)	without: 230V AC, 01 = 115V AC, 02 = 24V AC, 08 = 24V DC

Block diagram:



Installation: Before installation inspect the controller for any visible signs of damage caused during transport.
Check power supply acc. to name plate.
Lock the housing with its tightening groove on the mounting rail.

Electrical wiring:
Connect up the device following the wiring diagram
- wire cross section max. 1,5 mm^2
- To avoid cross interference *all low voltage measuring lines and pilot wires* must be encased in a ***shielded cable*** (the shielding must be earthed one-sided).
- The control leads must be ***fused*** *externally* to protect the output relays.
- Phase wire and neutral wire must not be transposed.
- Exclude hazards due to live parts using an appropriate installation ,e.g. in a control cabinet, to protect against unintentional contact.

Putting into operation:
Switch on power supply. Depending on the setpoint, control lamps and the display will light up after a few seconds. If nothing happens: Switch off power supply, check electrical connections and other adjustments.

Maintenance:
All electronic devices in the product range of the manufacturer are virtually maintenance-free. Provided that the device is correctly installed and put into operation and is protected against mechanical damage and inadmissible operating conditions, it should give years of trouble-free service. *In case of faults* repair work by the customer should be restricted to the externally accessible leads and connections and components the customer is expressly permitted to deal with himself (bridge circuits, fuses).

All further work, especially on internal components will terminate warranty, makes subsequent inspection and fault repair more difficult and can cause considerable damage to the circuitry.

For repair remittance mark and remove the connected leads .

In case of remittance please give precise details of the fault to reduce time and cost of repair.

Parameter settings: (*existing for model with signal outputs ..og2 only, resp. depending on type*)
The device is delivered preadjusted, the start / end of range (-200 / 600) and the setting (4-20) of the signal outputs are non-adjustable. In case of changes, the preadjustments can easily be modificated by a configuration program (WinPKS-PC-software, from version 2.39) using the configuration interface.

		factory setting	*notes*
Adr	Address KFM device 8..	5	___

Function:

After the mains voltage has been switched on, the operating indicator lights up. If the actual value is lower than the set value, both relays switch on, LEDs K1 and K2 light up, and the electrical output circuit is closed. If the actual value is higher than the set value, both relays are released and the LEDs go out. The electrical safety circuit is interrupted, and the normally closed contacts of the relays connect the voltage from terminal 16 to the fault signal output at terminal 14. Even if the actual value then falls again below the set value, or if the mains voltage is interrupted, the status remains unchanged. Only after the internal reset button, or an externally connected reset button, is pressed, and when the actual value is smaller than the set value (less the hysteresis), can the temperature limiter return to the operating state.

Adjusting the set values:

Type 845 210 (model without display of the set value):
Some appropriate means (a resistor decade box or similar simulator) is used to simulate the desired trigger temperature at the sensor input. This is entered as a new set value by pressing the "SET" button.
Note: Tolerance figures related to the components must be considered in relation to the set value range when using this version.

Type 845 220 (model with display of the set value):
The mode in which the set value is adjusted is activated by pressing the "SET" button, and the displayed value flashes. The new set value can now be adjusted using the arrow keys. The setting mode is deactivated by pressing the "SET" button again. The displayed value ceases to flash, and the adjusted value is adopted as the new set value.

For reasons of safety the set value should be adjusted on the Type 845 220 to a value 2K below the desired trigger value to allow for possible component tolerances. As an alternative, the determined trigger value can be noted on the safety label!

In accordance with DIN EN 14597, the set value must be secured against accidental or unauthorised modification. For this purpose, a safety label is applied over the "Set" button to seal it. In the case of devices of Type 845210 the set value must be recorded on the safety label.

Whenever the set value is adjusted, the function of the device is to be checked by simulating a corresponding temperature at the sensor input!

Function check:

In accordance with DIN EN 14597 the safety temperature limiter must be subjected to a function check once a year. To do this, the recessed test buttons are pressed in sequence, holding them down for about 3 seconds each. Pressing the first test button makes it possible to check that the associated relay releases, the corresponding LED goes out, the electrical safety circuit is interrupted and the external fault signal lamp lights up. The device must return to the normal condition by pressing the reset button. Both LEDs light up again, and the electrical safety circuit is closed. The second channel is then to be tested in the same way.

The annual function check specified by DIN EN 14597 is only carried out correctly if the two buttons are pressed independently, one after the other.

Faults:

There are a number of reasons why, after having been triggered in operation or after carrying out the function check, the device does not return again to the normal state despite the actual value being sufficiently low. The first step should be to check, e.g. by means of a resistance measurement, whether the sensor, including all the measurement cables, is OK.
Check also whether the actual value is indeed within the permissible measuring range. If the range is exceeded, the device switches off. When an attempt is made to reset the device, the relays close briefly but immediately open again, so that operation is not possible. Only when the actual value is within the acceptable range again is normal operation of the device possible following a reset.

If the possible sources of malfunction mentioned above had been ruled out, it can be assumed that there is an internal fault.
In that case, the device must be exchanged and returned to the factory for examination.

Acceptable sensors:
All temperature sensors demonstrably according to DIN EN 14597 are acceptable. Please observe the specifications about type, application range, installation conditions and time constant in the VDTÜV datasheet.

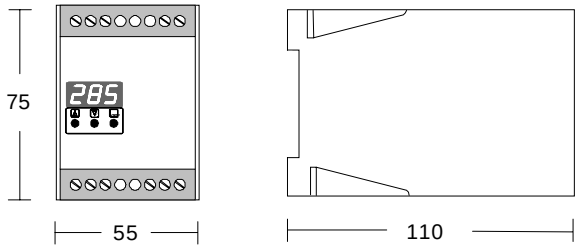
Type	Operating medium	Maximum switching point	Protection tube
713 4..	Liquids	400 °C	Without immersion sleeve
713 5..	Air and exhaust fumes	400 °C	Without immersion sleeve
715..	Liquids	400 °C	Only use protection tube supplied

Characteristic values:

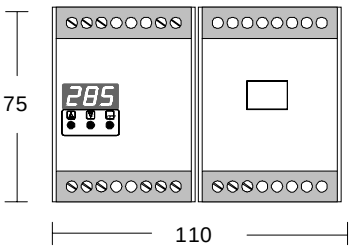
Input / Measuring range:	1 x Pt 100 DIN / -200 ... + 600 °C, others optional
Set value adjustable range:	*Note: Observe the sensor's switching point!* Type 845 210: -200 °C (+10K) ... 600 °C (-10K) Type 845 220: -99 ... 600 °C
Adjusting the set values:	Using recessed, sealable push-button
Output:	2 relays, max. 250 V 2 A*, Option: 1xLogic (open coll. max 24VDC/100mA) status display ch. 1 Option: 2 cont. outputs 4...20mA (Load<=500Ω) for actual-/ setpoint value
Switching hysteresis:	8 K +/- 1K, other values available on request (expressed as appendix to type identifier in plain text, e.g. 845 220 4K)
Process safety time (PST):	10 seconds
Housing:	For fastening to 35 mm mounting rail, or for screw fastening
Mains connection:	230VAC + 10 % / - 15 %, 48...62Hz, alt. 115 VAC, 24 VAC, 24VDC
Power consumption:	Approx. 4 VA
Fusing:	Secondary side, T 250 mA
Type of protection acc. EN 60529:	IP 20, for mounting within a housing offering at least IP 40
Permissible ambient temperature:	0...60°C, Nominal temperature: 20°C
Storage and transport temperature:	-20 ... +80 °C
Climatic resistance:	Relative humidity <= 75 % annual average without condensation
Electromagnetic compatibility:	In accordance with EN 61326, industrial requirements
Installation orientation:	optional
Data transfer rate:	9600Bit/s

Installation dimensions:

Only safety temperature limiter:



Safety temperature limiter incl. service interface / signal outputs



Connection diagram: